Policy Compendium

American College of Emergency Physicians, Dallas, Texas Policies are available on ACEP's website at **http://www.acep.org/policies**

TABLE OF CONTENTS

FOREWORD

We are pleased to present the American College of Emergency Physicians (ACEP) *Policy Compendium.* This reference guide contains the complete text of the College's current policy statements.

The ACEP Board of Directors sets policy for the College. The breadth of this compendium illustrates the scope of external issues being addressed by emergency medicine and is an essential resource for ACEP's policy communication, research and development efforts.

In 2002, the ACEP Board of Directors directed that all policy statements undergo automatic regular review. In the fifth year after the adoption of a policy statement, the policy statement is referred to the appropriate ACEP committee or section, with relevant content expertise, for a full review and recommendation to the Board of Directors regarding further action. Policy statements may then be reaffirmed, revised, rescinded or allowed to sunset.

New College policy statements may be approved at Board of Directors meetings throughout the year. They are added to the compendium and the ACEP website and are distributed to all ACEP members via the online version of *Annals of Emergency Medicine*.

Users of this compendium may use the bookmarks to search for policy statements by title or by subject area, as well as through a keyword search engine. Policy statements are available on ACEP's web site at **http://www.acep.org**.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

STATEMENT OF DIRECTION

Mission Statement

The American College of Emergency Physicians (ACEP) exists to support quality emergency medical care, and to promote the interests of emergency physicians.

Values

The Board of Directors has identified values that serve as the guiding principles for the specialty of emergency medicine. These values, and the objectives that follow, are the foundation of ACEP's planning processes and Council and Board actions.

The values of the American College of Emergency Physicians are:

- Quality emergency care is a fundamental right and unobstructed access to emergency services should be available to all patients who perceive the need for emergency services.
- There is a body of knowledge unique to emergency medicine that requires continuing refinement and development.
- Physicians entering the practice of emergency medicine should be residency trained in emergency medicine.
- Quality emergency medicine is best practiced by qualified, credentialed emergency physicians.
- The best interests of patients are served when emergency physicians practice in a fair, equitable, and supportive environment.
- Emergency physicians have the responsibility to play the lead roles in the definition, management, evaluation, and improvement of quality emergency care.

Approved by the Board of Directors
August 16, 2000

POLICY STATEMENTS BY SUBJECT

***Indicates the policy statement has an associated Policy Resource and Education Paper (PREP)**

CERTIFICATION/CREDENTIALING

- ACEP Recognized Certifying Bodies in Emergency Medicine
- Advocating for Certified Emergency Nurses (CENs) in Departments of Emergency Medicine
- CME Burden
- Economic Credentialing
- Emergency Medicine Training, Competency, and Professional Practice Principles
- Emergency Ultrasound Certification by External Entities
- Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department
- Hospital Disaster Physician Privileging
- Physician Credentialing and Delineation of Clinical Privileges in Emergency Medicine *
- Physician Impairment
- Procedural Sedation in the Emergency Department
- Providers of Unsupervised Emergency Department Care
- Recognition of Subspecialty Boards in Emergency Medicine
- State Board of Medicine Regulation of Non-Physician Practitioners Practicing Medicine
- The Role of the Legacy Emergency Physician in the 21st Century
- Unsolicited Medical Personnel Volunteering at Disaster Scenes
- Use of Short Courses in Emergency Medicine as Criteria for Privileging or Employment
- Use of the Title “Doctor” in the Clinical Setting

COVID-19

- Care of Patients with Behavioral Health Emergencies and Suspected or Confirmed COVID-19
- COVID-19 Use of Donated or Self-Purchased Personal Protective Equipment (PPE)
- Role of Emergency Physicians in Disaster Preparedness and Response -(Impact of Pandemic)

CONTRACTS AND COMPENSATION

- Antitrust
- Compensation Arrangements for Emergency Physicians
- Definition of Democracy in Emergency Medicine Practice
- Emergency Physician Compensation Transparency
- Emergency Physician Contractual Relationships *
- Emergency Physician Rights and Responsibilities
- Protecting Emergency Physician Compensation During Contract Transitions
- Salary and Benefits Considerations for Emergency Medical Services Professionals
- Third-Party Payers and Emergency Medical Care

DISASTER PREPAREDNESS AND RESPONSE

- Boarding of Admitted and Intensive Care Patients in the Emergency Department
- Boarding of Pediatric Patients in the Emergency Department
- Definition of Emergency Medicine
- Disaster Data Collection

- Disaster Medical Response
- Disaster Medical Services
- Disaster Planning and Response
- Disaster Telehealth
- Emergency Physician Involvement, Utilization, and Compensation During a Pandemic
- Emergency Physician Practice Costs
- Good Samaritan Protection
- Health Care System Surge Capacity Recognition, Preparedness and Response
- Hospital Disaster Physician Privileging
- Pediatric Mental Health Emergencies in the Emergency Department
- Personal Protective Equipment Guidelines for Health Care Facility Staff
- Role of Emergency Physicians in Disaster Preparedness and Response (Impact of Pandemic)
- Role of the State EMS Medical Director
- Support for National Disaster Medical System and Other Response Teams
- The Care of Patients Under Crisis Standards of Care
- The Patient-Centered Medical Home Model
- Unsolicited Medical Personnel Volunteering at Disaster Scenes

DIVERSION

- Boarding of Admitted and Intensive Care Patients in the Emergency Department
- Definition of Boarded Patient
- Emergency Department Utilization During Respiratory Disease Outbreaks

EMERGENCY MEDICAL SERVICES (EMS)

- 911 Caller Good Samaritan Laws
- A Culture of Safety in EMS Systems
- Access to 9-1-1 Public Safety Centers, Emergency Medical Dispatch, and Public Emergency Aid Training
- Appropriate and Safe Utilization of Helicopter Emergency Medical Services *
- Due Process for Physician Medical Directors of Emergency Medical Services
- Emergency Medical Services Interfaces with Health Care Systems
- Handling of Hazardous Materials
- High-Threat Event Casualty Care
- Human Resources Concepts Governing Physician Medical Directors of EMS
- Ketamine Use in Prehospital and Hospital Treatment of the Acute Trauma Patient
- Medical Transport Advertising, Marketing, and Brokering
- Military Considerations in Emergency Medical Services (EMS) *
- Naloxone Access and Utilization for Suspected Opioid Overdoses
- Out-of-Hospital Medical Direction and the Intervener Physician
- Patient Autonomy and Destination Factors in Emergency Medical Services (EMS) and EMS-Affiliated Mobile Integrated Healthcare Community Paramedicine Programs
- Pediatric Readiness in Emergency Medical Services Systems
- Physician Medical Direction of Emergency Medical Services Education Programs *
- Prehospital Hemorrhage Control and Treatment by Clinicians: A Joint Position Statement
- Relationship Between Clinical Capabilities and Medical Equipment in the Practice of Emergency Medical Services Medicine
- Role of the State EMS Medical Director
- Salary and Benefits Considerations for Emergency Medical Services Professionals

- Special Roles for Emergency Medical Services Professionals
- Spinal Motion Restriction in the Trauma Patient
- Support for National Disaster Medical System and Other Response Teams
- Tactical Emergency Medical Support
- The Clinical Practice of Emergency Medical Services Medicine
- The Role of Emergency Physicians in Emergency Medical Services for Children
- The Role of the Physician Medical Director in Emergency Medical Services Leadership
- Transfer of Patient Care Between EMS Providers and Receiving Facilities
- Violence Prevention and Intervention in Emergency Medical Services Systems
- Withholding or Termination of Resuscitation in Pediatric Out-of-Hospital Traumatic Cardiopulmonary Arrest

ETHICS

- ACEP Business Arrangements
- Advertising and Publicity of Emergency Medical Care
- Animal Use in Research
- Antitrust
- Audiovisual Recording in the Emergency Department
- Best Practice Guidelines for Evaluating Patients in Custody in the Emergency Department
- Civil Commitment
- Code of Ethics for Emergency Physicians
- Collective Bargaining, Work Stoppages and Slowdowns
- College Board Member and Officer Expert Testimony
- Commercial Filming of Patients in the Emergency Department
- Confidentiality of Patient Information *
- Conflict of Interest
- Conflicts of Interest in Biomedical Research
- Cultural Awareness and Emergency Care
- Delivery of Care to Undocumented Persons
- Disclosure of Medical Errors
- Domestic Family Violence
- Electronic Prescription Drug Monitoring Programs
- Emergency Department Patient Rights and Responsibilities
- Emergency Physician Contractual Relationships *
- Emergency Physician Rights and Responsibilities
- Emergency Physician Stewardship of Finite Resources *
- Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department
- EMTALA and On-Call Responsibility for Emergency Department Patients
- Ethical Issues at the End of Life
- Ethical Issues of Resuscitation
- Ethical Use of Telehealth in Emergency Care
- Expert Witness Cross-Specialty Testimony for Standard of Care
- Expert Witness Guidelines for the Specialty of Emergency Medicine
- Fictitious Patients
- Gifts to Emergency Physicians from Industry *
- Guidelines for Emergency Physicians on the Interpretation of Physician Orders for Life-Sustaining Treatment (POLST)
- Law Enforcement Information Gathering in the Emergency Department
- Leadership and Volunteers Conduct Policy
- Medical Practice Review and the Practice of Medicine

- Meeting Conduct Policy
- National Pandemic Readiness: Ethical Issues
- Nonbeneficial Emergency Medical Interventions
- Non-Discrimination and Harassment
- Observers in Emergency Medical Settings
- Optimizing the Treatment of Acute Pain in the Emergency Department
- Patient-and Family Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department
- Physician Reporting of Potentially Impaired Drivers
- Treatment of Family, Friends, Colleagues, and Self
- Universal Health Care Coverage
- Use of Patient Restraints
- Use of Social Media by Emergency Physicians

HEALTH CARE REFORM

- Medical Services Coding
- Prior Authorization
- The Patient-Centered Medical Home Model
- Third-Party Payers and Emergency Medical Care
- Universal Health Care Coverage

HOSPITALS

- Advocating for Certified Emergency Nurses (CENs) in Departments of Emergency Medicine
- Appropriate Interfacility Patient Transfer
- Availability of Hospital Diagnostic and Therapeutic Services
- Boarding of Admitted and Intensive Care Patients in the Emergency Department
- Coverage for Patient Home Medication While Under Observation Status
- Definition of “Admit Time”
- Delivery of Care to Undocumented Persons
- Emergency Department Nurse Staffing
- Emergency Physician Rights and Responsibilities
- Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department
- EMTALA and On-Call Responsibility for Emergency Department Patients
- Food and Drink for Staff in the Emergency Department
- Freestanding Emergency Departments
- Geriatric Emergency Department Guidelines
- Good Samaritan Protection
- Handling of Hazardous Materials
- Immunization of Adults and Children in the Emergency Department
- Non-Discrimination and Harassment
- Personal Protective Equipment Guidelines for Health Care Facility Staff
- Protection from Violence and the Threat of Violence in the Emergency Department

- Providers of Unsupervised Emergency Department Care
- Responsibility for Admitted Patients
- Safer Working Conditions for Emergency Department Staff
- Social Services and Case Coordination in the Emergency Department
- Specialty Hospitals
- Transition of Care for Emergency Department Patients
- Urgent Care Centers
- Workforce Diversity in Health Care Settings

IMAGING

- Advanced Practice Provider Point-of-Care Ultrasound Guidelines
- Appropriate Use Criteria for Handheld/Pocket Ultrasound Services
- Availability of Hospital Diagnostic and Therapeutic Services
- Definition of Clinical Ultrasonography
- Disinfection of Ultrasound Transducers Used for Percutaneous Procedures
- Emergency Department Ultrasound Privilege and Practice
- Emergency Ultrasound Certification by External Entities
- Emergency Ultrasound Imaging Criteria Compendium
- Guideline for Ultrasound Transducer Cleaning and Disinfection
- Interpretation of Diagnostic Imaging Tests
- Point-of-Care Ultrasonography by Pediatric Emergency Medicine Physicians
- Ultrasound-Guided Nerve Blocks
- Ultrasound Guidelines: Emergency, Point-of-Care, and Clinical Ultrasound Guidelines in Medicine
- Ultrasound Services in the Emergency Department
- Use of Transesophageal Echocardiography (TEE) in the ED for Shock, Cardiac Arrest, and Procedural Guidance

INFORMATION TECHNOLOGY AND DATA

- Disaster Data Collection
- Disaster Telehealth
- Electronic Prescription Drug Monitoring Programs
- Emergency Medicine Telehealth
- External Cause of Morbidity Codes and Injury Surveillance Data Systems
- Health Information Technology for Emergency Care
- Mitigating the Unintended Consequences of the CURES Act
- Patient Medical Records in the Emergency Department
- Standards for Measuring and Reporting Emergency Department Wait Times
- Telehealth Inclusion

INJURY PREVENTION

- Firearm Safety and Injury Prevention
- International Development and Promotion of Emergency Medicine
- Pedestrian Injury Prevention
- Role of the Emergency Physician in Injury Prevention and Control of Adult and Pediatric Patients
- The Role of Emergency Physicians in the Care of Children
- Universal Bicycle Helmet Use
- Worldwide Nuclear Disarmament

INJURY PREVENTION - MOTOR VEHICLE INJURY

- Motor Vehicle Safety
- Pedestrian Injury Prevention
- School Bus Safety

MEDICAL EDUCATION

- Academic Departments of Emergency Medicine and Required Emergency Medicine Education in Medical Schools
- Appropriate Use of Race in Research
- Compensated Time for Faculty Academic Administration and Teaching Involvement
- Emergency Physician Rights and Responsibilities
- Fictitious Patients
- Financing of Graduate Medical Education in Emergency Medicine
- Guidelines for Undergraduate Education in Emergency Medicine
- Overcoming Barriers to Promotion of Women and Underrepresented in Medicine (URiM) Faculty in Academic Emergency Medicine
- Physician Medical Direction of Emergency Medical Services Education Programs
- Prioritization of Resident Education in Procedures
- Providers of Unsupervised Emergency Department Care
- Recognition of Subspecialty Boards in Emergency Medicine
- Resident Training for Practice in Non-Urban/Underserved Areas
- Scholarly Sabbatical Leave for Emergency Medicine Faculty
- The Role of the Legacy Emergency Physician in the 21st Century
- Use of Short Courses in Emergency Medicine as Criteria for Privileging or Employment
- Use of the Title “Doctor” in the Clinical Setting

MENTAL HEALTH

- Adult Psychiatric Emergencies
- Civil Commitment
- The Management of Children and Youth with Pediatric Mental and Behavioral Health Emergencies
- Use of Patient Restraints

PATIENT SAFETY

- Boarding for Admitted and Intensive Care Patients in the Emergency Department
- Clinical Guidelines Affecting Emergency Medicine Practice
- Emergency Physician Stewardship of Finite Resources
- Fictitious Patients
- Providers of Unsupervised Emergency Department Care
- Use of Patient Restraints

PEDIATRICS/CHILDREN AND YOUTH

- Access to Critical Health Information for Children During Emergencies: Emergency Information Forms and Beyond
- Access to Optimal Emergency Care for Children
- Boarding of Pediatric Patients in the Emergency Department
- Corporal Punishment of Children
- Death of a Child in the Emergency Department

- Evaluation and Treatment of Minors *
- Handoffs: Transitions of Care for Children in the Emergency Department
- Immunization of Adults and Children in the Emergency Department
- Management of the Patient With the Complaint of Sexual Assault
- Neglect and Child Physical Abuse Presenting with Sentinel Injuries in Children Four Years and Younger in the Emergency Department
- Optimizing Pediatric Patient Safety in the Emergency Care Setting *
- Patient and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department
- Pediatric Readiness in Emergency Medical Services Systems
- Pediatric Readiness in the Emergency Department
- Point-of-Care Ultrasonography by Pediatric Emergency Medicine Physicians
- Recognition of Subspecialty Boards in Emergency Medicine
- Role of the Emergency Physician in Injury Prevention and Control for Adult and Pediatric Patients
- School Bus Safety
- The Management of Children and Youth with Pediatric Mental and Behavioral Health Emergencies
- The Role of Emergency Physicians in Emergency Medical Services for Children
- The Role of Emergency Physicians in the Care of Children
- Travel Screening of Pediatric Patients for International Travel, High Risk Areas, and Isolation
- Use of Antitussive Medications in the Pediatric Population

PHYSICIAN PAYMENT

- Assignment of Benefits
- Compensation Arrangements for Emergency Physicians
- Corporate Practice of Medicine
- Emergency Physician Compensation Transparency
- Emergency Physician Practice Costs
- Fair Compensation to Emergency Physicians to Supervise ABEM/AOBEM Board Certified/Eligible Led Teams
- Fair Payment for Emergency Department Services
- Fair Reimbursement when Services are Mandated
- Medical Services Coding
- Payment for Ultrasound Services in the Emergency Department
- The Patient-Centered Medical Home Model
- Third-Party Payers and Emergency Medical Care

PHYSICIAN WELLBEING

- Considerations for Emergency Physicians in Pre-Retirement Years
- Emergency Physician Shift Work *
- Family and Medical Leave
- Physician Impairment

PRACTICE MANAGEMENT

- 2022 Model of the Clinical Practice of Emergency Medicine
- Appropriate Interfacility Patient Transfer
- Bloodborne Pathogens in Emergency Medicine
- Boarding of Admitted and Intensive Care Patients in the Emergency Department
- Caring for Transgender and Gender Diverse Patients in the Emergency Department

- Clinical Guidelines Affecting Emergency Medicine Practice
- Clinical Pharmacist Services in the Emergency Department
- Corporate Practice of Medicine
- Coverage for Patient Home Medication While Under Observation Status
- Crowding
- Cultural Awareness and Emergency Care
- Definition of "Admit Time""”
- Definition of an Emergency Physician
- Definition of an Emergency Service
- Definition of Boarded Patient
- Definition of Emergency Medicine
- Electronic Prescription Drug Monitoring Programs
- Emergency Department Observation Services *
- Emergency Department Planning and Resource Guidelines
- Emergency Department Utilization During Respiratory Disease Outbreaks
- Emergency Medicine Telehealth
- Emergency Medicine’s Role in Organ and Tissue Donation
- Emergency Physician Rights and Responsibilities
- Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department
- EMTALA and On-Call Responsibility for Emergency Department Patients
- Ensuring Emergency Department Patient Access to Appropriate Pain Treatment
- External Cause of Morbidity Codes and Injury Surveillance Data Systems
- Food and Drink for Staff in the Emergency Department
- Freestanding Emergency Departments
- Geriatric Emergency Department Guidelines
- Handling for Hazardous Materials
- Handoffs: Transitions of Care for Children in the Emergency Department
- Health Care Guidelines for Cruise Ship Medical Facilities *
- Health Information Technology for Emergency Care
- Interference in the Physician-Patient Relationship
- International Development and Promotion of Emergency Medicine
- Interpretation of Diagnostic Imaging Tests
- Mechanical Ventilation
- Medical Cannabis
- Non-Discrimination and Harassment
- Opposition to Copays for Medicaid Beneficiaries
- Opposition to Routine Culturing of Skin and Soft Tissue Abscesses
- Optimizing the Treatment of Acute Pain in the Emergency Department
- Orders Received from Outside the Emergency Department
- Patient Experience of Care Surveys
- Patient Medical Records in the Emergency Department
- Personal Protective Equipment Guidelines for Health Care Facility Staff
- Prescription Drug Pricing
- Procedural Sedation in the Emergency Department
- Protection from Violence and the Threat of Violence in the Emergency Department
- Providers of Unsupervised Emergency Department Care
- Providing Telephone Advice from the Emergency Department

- Rapid-Sequence Intubation
- Responsibility for Admitted Patients
- Retail-Based Clinics
- Reversal of Non-Vitamin K Antagonist Oral Anticoagulants (NOACs) in the Presence of Major Life-Threatening Bleeding
- Role of the Emergency Physician in the Care of Trauma Patients
- Rural Emergency Medical Care
- Safe Discharge from the Emergency Department
- Screening Questions at Triage
- Specialty Hospitals
- Staffing Models and the Role of the Emergency Department Medical Director
- Standardized Protocols for Optimizing Emergency Department Care
- Standards for Measuring and Reporting Emergency Department Wait Times
- Sub-dissociative Dose Ketamine for Analgesia *
- Transition of Care for Emergency Department Patients
- Triage Scale Standardization
- Unscheduled Procedural Sedation: A Multidisciplinary Consensus Practice Guideline
- Use of Droperidol in the Emergency Department
- Use of High-Sensitivity Cardiac Troponin in the Emergency Department
- Use of Medical Interpreters in the Emergency Department
- Use of Nurse-Implemented Order Sets
- Use of Peak Expiratory Flow Rate Monitoring for the Management of Asthma in Adults in the Emergency Department *
- Use of Short Courses in Emergency Medicine as Criteria for Privileging or Employment
- Verification of Endotracheal Tube Placement
- Workforce Diversity in Health Care Settings
- Writing Admission and Transition Orders *

PROFESSIONAL LIABILITY

- Anonymous Affidavits of Merit
- Anonymous Complaints to State Licensing Boards by Third Parties
- Anonymous Expert Physician Testimony for a State Medical Licensing Board
- College Board Member and Office Expert Testimony
- Disaster Medical Response
- Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department
- Expert Witness Guidelines for the Specialty of Emergency Medicine
- Fictitious Patients
- Good Samaritan Protection
- Health Courts
- Interpretation of EMTALA in Investigations, Enforcement, and Medical Malpractice Litigation
- Law Enforcement Information Gathering in the Emergency Department
- Medical Practice Review and the Practice of Medicine
- Protection of Physicians and Other Health Care Professionals from Criminal Liability for Medical Care Provided
- Reform of Tort Law
- Responsibility for Admitted Patients
- State Medical Board Peer Review

PUBLIC HEALTH

- Access to Reproductive Health Care in the Emergency Department
- Addressing Nicotine Use
- Alcohol Advertising
- Antimicrobial Stewardship
- Autonomous Self-Driving Vehicles
- Bloodborne Pathogens in Emergency Medicine
- Definition of an Emergency Service
- Delivery of Care to Undocumented Persons
- Domestic Family Violence
- Drug Take Back Programs
- Emergency Contraception for Women at Risk of Unintended and Preventable Pregnancy
- Emergency Department Utilization During Respiratory Disease Outbreaks
- Expedited Partner Therapy for Selected Sexually Transmitted Infections *
- External Cause of Morbidity Codes and Injury Surveillance Data Systems
- Human Trafficking
- Immunization of Adults and Children in the Emergency Department
- Impact of Climate Change on Public Health and Implications for Emergency Medicine
- Management of the Patient with the Complaint of Sexual Assault
- Medical Neutrality
- Motor Vehicle Safety *
- National Pandemic Readiness: Ethical Issues
- Overdose Prevention Centers
- Pedestrian Injury Prevention
- Physician Reporting of Potentially Impaired Drivers
- Prevention of Harm from Internet and Social Media Challenges
- Protection from Violence and the Threat of Violence in the Emergency Department
- Reporting of Vaccine-Related Adverse Events
- Role of Poison Centers in Emergency Health Care, Preparedness, and Response
- Rural Emergency Medical Care
- Safer Working Conditions for Emergency Department Staff
- School Bus Safety
- Screening for Disease and Risk Factors in the Emergency Department
- Selective Triage for Victims of Sexual Assault to Designated Exam Facilities
- Separation of Children from Family/Guardians
- Social Services and Care Coordination in the Emergency Department *
- Strangulation and Neck Compression
- Support for Nursing Mothers
- The Role of Emergency Physicians in the Completion of Death Certificates
- Trauma Care Systems
- Universal Bicycle Helmet Use
- Universal Health Care Coverage
- Violence-Free Society
- Work Requirements for Medicaid Beneficiaries
- Worldwide Nuclear Disarmament

STAFF/WORKFORCE

- Advocating for Certified Emergency Nurses ((CENs) in Departments of Emergency Medicine
- Bloodborne Pathogens in Emergency Medicine
- Collective Bargaining,for Stoppages,and Slowdowns
- Compensated Time for Faculty Academic Administration and Teaching Involvement
- Considerations for Emergency Physicians in Pre-Retirement Years
- Defining the Job Description of an Emergency Physician
- Emergency Department Nurse Staffing
- Emergency Department Patient Navigator Role and Training
- Emergency Medicine Workforce
- Emergency Physician Shift Work
- Food and Drink for Staff in the Emergency Department
- Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department
- Immunization of Adults and Children in the Emergency Department
- Implicit Bias Awareness and Training
- Maximizing the Potential of Women in Emergency Medicine
- Opposing the Use of the Term "Provider"
- Overcoming Barriers to Promotion of Women and Underrepresented in Medicine (URiM) Faculty in Academic Emergency Medicine
- Personal Protective Equipment Guidelines for Health Care Facility Staff
- Safer Working Conditions for Emergency Department Staff
- Staffing Models and the Role of the Emergency Department Medical Director
- Supporting Political Advocacy in the Emergency Department
- Triage Scale Standardization
- Use of the Title “Doctor” in the Clinical Setting
- Workforce Diversity in Health Care Settings

SUBSTANCE ABUSE

- 911 Caller Good Samaritan Laws
- Alcohol Advertising
- Drug Take Back Programs
- Electronic Prescription Drug Monitoring Programs
- Naloxone Access and Utilization for Suspected Opioid Overdoses
- Optimizing the Treatment of Acute Pain in the Emergency Department
- Overdose Prevention Centers
- Sub-dissociative Dose Ketamine for Analgesia
- Use of Patient Restraints

VIOLENCE AND ABUSE

- Domestic Family Violence
- Management of the Patient with the Complaint of Sexual Abuse
- Neglect and Child Physical Abuse Presenting with Sentinel Injuries in Children Four Years and Younger in the Emergency Department
- Protection from Violence in the Emergency Department
- Selective Triage for Victims of Sexual Assault to Designated Exam Facilities
- Violence-Free Society
- Violence Prevention and Intervention in Emergency Medical Services Systems

POLICY STATEMENTS BY ALPHABET

***Indicates the policy statement has an associated Policy Resource and Education Paper (PREP)**

2022 Model of the Clinical Practice of Emergency Medicine
911 Caller Good Samaritan Laws
A Culture of Safety in EMS Systems
Academic Departments of Emergency Medicine and Required Emergency Medicine Education in Medical Schools
Access to 9-1-1 Public Safety Centers, Emergency Medical Dispatch, and Public Emergency Aid Training Access to Critical Health Information for Children During Emergencies: Emergency Information Forms and Beyond
Access to Optimal Emergency Care for Children
Access to Reproductive Health Care in the Emergency Department
ACEP Business Arrangements
ACEP Recognized Certifying Bodies in Emergency Medicine
Addressing Nicotine Use
Adult Psychiatric Emergencies
Advanced Practice Provider Point-of-Care Ultrasound Guidelines
Advertising and Publicity of Emergency Medical Care
Advocating for Certified Emergency Nurses (CENs) in Departments of Emergency Medicine
Alcohol Advertising
Animal Use in Research
Anonymous Affidavits of Merit
Anonymous Complaints to State Licensing Boards by Third Parties
Anonymous Expert Physician Testimony for a State Medical Licensing Board
Antimicrobial Stewardship
Antitrust
Appropriate and Safe Utilization of Helicopter Emergency Medical Services *
Appropriate Interfacility Patient Transfer
Appropriate Use Criteria for Handheld/Pocket Ultrasound Devices
Appropriate Use of Race in Research
Assignment of Benefits
Audiovisual Recording in the Emergency Department
Autonomous Self-Driving Vehicles
Availability of Hospital Diagnostic and Therapeutic Services
Best Practice Guidelines for Evaluating Patients in Custody in the Emergency Department
Bloodborne Pathogens in Emergency Medicine
Boarding of Admitted and Intensive Care Patients in the Emergency Department
Boarding of Pediatric Patients in the Emergency Department
Care of Patients with Behavioral Health Emergencies and Suspected or Confirmed COVID-19
Caring for Transgender and Gender Diverse Patients in the Emergency Department
Civil Commitment
Clinical Guidelines Affecting Emergency Medicine Practice
Clinical Pharmacist Services in the Emergency Department
CME Burden
Code of Ethics for Emergency Physicians
Collective Bargaining, Work Stoppages, and Slowdowns
College Board Member and Officer Expert Testimony
Commercial Filming of Patients in the Emergency Department

Compensated Time for Faculty Academic Administration and Teaching Involvement
Compensation Arrangements for Emergency Physicians
Confidentiality of Patient Information *
Conflict of Interest
Conflicts of Interest in Biomedical Research
Considerations for Emergency Physicians in Pre-Retirement Years
Corporal Punishment of Children
Corporate Practice of Medicine
Coverage for Patient Home Medication While Under Observation Status
COVID-19 Use of Donated or Self-Purchased Personal Protective Equipment (PPE)
Crowding
Cultural Awareness and Emergency Care
Death of a Child in the Emergency Department
Defining the Job Description of an Emergency Physician
Definition of""Admit Time"
Definition of an Emergency Physician
Definition of an Emergency Service
Definition of Boarded Patient
Definition of Clinical Ultrasonography
Definition of Democracy in Emergency Medicine Practice
Definition of Emergency Medicine
Definition of Emergency Medicine Residency
Delivery of Care to Undocumented Persons
Disaster Data Collection
Disaster Medical Response
Disaster Medical Services
Disaster Planning and Response
Disaster Telehealth
Disclosure of Medical Errors
Disinfection of Ultrasound Transducers Used for Percutaneous Procedures
Domestic Family Violence
Drug Take Back Programs
Due Process for Physician Medical Directors of Emergency Medical Services Economic Credentialing
Electronic Prescription Drug Monitoring Programs
Emergency Contraception for Women at Risk of Unintended and Preventable Pregnancy
Emergency Department Nurse Staffing
Emergency Department Observation Services *
Emergency Department Patient Navigator Role and Training
Emergency Department Patient Rights and Responsibilities
Emergency Department Planning and Resource Guidelines
Emergency Department Ultrasound Privilege and Practice
Emergency Department Utilization During Respiratory Disease Outbreaks
Emergency Medical Services Interfaces with Health Care Systems
Emergency Medicine Telehealth
Emergency Medicine Training, Competency, and Professional Practice Principles
Emergency Medicine Workforce
Emergency Medicine's Role in Organ and Tissue Donation
Emergency Physician Contractual Relationships *
Emergency Physician Involvement, Utilization, and Compensation During a Pandemic

Emergency Physician Practice Costs
Emergency Physician Rights and Responsibilities
Emergency Physician Shift Work *
Emergency Physician Stewardship of Finite Resources *
Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department
Emergency Ultrasound Certification by External Entities
Emergency Ultrasound Imaging Criteria Compendium
EMTALA and On-Call Responsibility for Emergency Department Patients
Ensuring Emergency Department Patient Access to Appropriate Pain Treatment
Ethical Issues at the End of Life
Ethical Issues of Resuscitation
Ethical Use of Telehealth in Emergency Care
Evaluation and Treatment of Minors
Expedited Partner Therapy for Selected Sexually Transmitted Infections*
Expert Witness Cross-Specialty Testimony for Standard of Care
Expert Witness Guidelines for the Specialty of Emergency Medicine
External Cause of Morbidity Codes and Injury Surveillance Data Systems
Fair Compensation to Emergency Physicians to Supervise ABEM/AOBEM Board Certified/Eligible Led Teams
Fair Payment for Emergency Department Services
Fair Reimbursement when Services are Mandated
Family and Medical Leave
Fictitious Patients
Financing of Graduate Medical Education in Emergency Medicine
Firearm Safety and Injury Prevention
Food and Drink for Staff in the Emergency Department
Freestanding Emergency Departments
Geriatric Emergency Department Guidelines
Gifts to Emergency Physicians from Industry *
Good Samaritan Protection
Guideline for Ultrasound Transducer Cleaning and Disinfection
Guidelines for Emergency Physicians on the Interpretation of Physician Orders for Life-Sustaining Treatment (POLST)
Guidelines for Undergraduate Education in Emergency Medicine
Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department Handling of Hazardous Materials
Handoffs: Transitions of Care for Children in the Emergency Department
Health Care Guidelines for Cruise Ship Medical Facilities *
Health Care System Surge Capacity Recognition, Preparedness, and Response
Health Courts
Health Information Technology for Emergency Care
High-Threat Event Casualty Care
Hospital Disaster Physician Privileging
Human Resources Concepts Governing Physician Medical Directors of EMS
Human Trafficking
Immunization of Adults and Children in the Emergency Department
Impact of Climate Change on Public Health and Implications for Emergency Medicine

Implicit Bias Awareness and Training
Interference in the Physician-Patient Relationship
International Development and Promotion of Emergency Medicine
Interpretation of Diagnostic Imaging Tests
Interpretation of EMTALA in Investigations, Enforcement, and Medical Malpractice Litigation
Ketamine Use in Prehospital and Hospital Treatment of the Acute Trauma Patient
Law Enforcement Information Gathering in the Emergency Department
Leadership and Volunteers Conduct Policy
Management of the Patient with the Complaint of Sexual Assault
Maximizing the Potential of Women in Emergency Medicine
Mechanical Ventilation
Medical Cannabis
Medical Neutrality
Medical Practice Review and the Practice of Medicine
Medical Services Coding
Medical Transport Advertising, Marketing, and Brokering
Meeting Conduct Policy
Military Considerations in Emergency Medical Services (EMS) *
Mitigating the Unintended Consequences of the CURES Act
Motor Vehicle Safety
Naloxone Access and Utilization for Suspected Opioid Overdoses
National Pandemic Readiness: Ethical Issues
Neglect and Child Physical Abuse Presenting with Sentinel Injuries in Children Four Years and Younger in the Emergency Department
Nonbeneficial Emergency Medical Interventions
Non-Discrimination and Harassment
Observers in Emergency Medical Settings
Opposing the Use of the Term "Provider"
Opposition to Copays for Medicaid Beneficiaries
Opposition to Routine Culturing of Skin and Soft Tissue Abscesses
Optimizing Pediatric Patient Safety in the Emergency Care Setting *
Optimizing the Treatment of Acute Pain in the Emergency Department
Orders Received from Outside the Emergency Department
Out-of-Hospital Medical Direction and the Intervener Physician
Overcoming Barriers to Promotion of Women and Underrepresented in Medicine (URiM) Faculty in Academic Emergency Medicine
Overdose Prevention Centers
Patient Autonomy and Destination Factors in Emergency Medical Services (EMS) and EMS-Affiliated Mobile Integrated Healthcare/Community Paramedicine Programs
Patient- and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Dept.
Patient Experience of Care Surveys
Patient Medical Records in the Emergency Department
Pedestrian Injury Prevention
Pediatric Readiness in Emergency Medical Services Systems
Pediatric Readiness in the Emergency Department
Personal Protective Equipment Guidelines for Health Care Facility Staff
Physician Credentialing and Delineation of Clinical Privileges in Emergency Medicine *
Physician Impairment

Physician Medical Direction of Emergency Medical Services Education Programs *
Physician Reporting of Potentially Impaired Drivers
Point-of-Care Ultrasonography by Pediatric Emergency Medicine Physicians
Prehospital Hemorrhage Control and Treatment by Clinicians: A Joint Position Statement
Prescription Drug Pricing
Prevention of Harm from Internet and Social Media Challenges
Prior Authorization
Prioritization of Resident Education in Procedures
Procedural Sedation in the Emergency Department
Protecting Emergency Physician Compensation During Contract Transitions
Protection from Violence and the Threat of Violence in the Emergency Department
Protection of Physicians and Other Health Care Professionals from Criminal Liability for Medical Care Provided
Providers of Unsupervised Emergency Department Care
Providing Telephone Advice from the Emergency Department
Rapid-Sequence Intubation
Recognition of Subspecialty Boards in Emergency Medicine
Reform of Tort Law
Relationship Between Clinical Capabilities and Medical Equipment in the Practice of Emergency Medical Services Medicine
Reporting of Vaccine-Related Adverse Events
Resident Training for Practice in Non-Urban/Underserved Areas
Responsibility for Admitted Patients
Retail-Based Clinics
Reversal of Non-Vitamin K Antagonist Oral Anticoagulants (NOACs) in the Presence of Major Life-Threatening Bleeding
Role of Emergency Physicians in Disaster Preparedness and Response (Impact of COVID Pandemic)
Role of Poison Centers in Emergency Health Care, Preparedness, and Response
Role of the Emergency Physician in Injury Prevention and Control for Adult and Pediatric Patients
Role of the Emergency Physician in the Care of Trauma Patients
Role of the State EMS Medical Director
Rural Emergency Medical Care
Safe Discharge from the Emergency Department
Safer Working Conditions for Emergency Department Staff
Salary and Benefits Considerations for Emergency Medical Services Professionals
Scholarly Sabbatical Leave for Emergency Medicine Faculty
School Bus Safety
Screening for Disease and Risk Factors in the Emergency Department
Screening Questions at Triage
Selective Triage for Victims of Sexual Assault to Designated Exam Facilities
Separation of Children from Family/Guardians
Social Services and Care Coordination in the Emergency Department *
Special Roles for Emergency Medical Services Professionals
Specialty Hospitals
Spinal Motion Restriction in the Trauma Patient
Staffing Models and the Role of the Emergency Department Medical Director
Standardized Protocols for Optimizing Emergency Department Care
Standards for Measuring and Reporting Emergency Department Wait Times
State Board of Medicine Regulation of Non-Physician Practitioners Practicing Medicine
State Medical Board Peer Review
Strangulation and Neck Compression

Sub-dissociative Dose Ketamine for Analgesia *
Support for National Disaster Medical System and Other Response Teams
Support for Nursing Mothers
Supporting Political Advocacy in the Emergency Department
Tactical Emergency Medical Support
Telehealth Inclusion
The Care of Patients Under Crisis Standards of Care
The Clinical Practice of Emergency Medical Services Medicine
The Management of Children and Youth with Pediatric Mental and Behavioral Health Emergencies
The Patient-Centered Medical Home Model
The Role of Emergency Physicians in Emergency Medical Services for Children
The Role of Emergency Physicians in the Care of Children
The Role of Emergency Physicians in the Completion of Death Certificates
The Role of the Legacy Emergency Physician in the 21st Century
The Role of the Physician Medical Director in Emergency Medical Services Leadership
Third-Party Payers and Emergency Medical Care
Transfer of Patient Care Between EMS Providers and Receiving Facilities
Transition of Care for Emergency Department Patients
Trauma Care Systems
Travel Screening of Pediatric Patients for International Travel, High Risk Areas, and Isolation
Treatment of Family, Friends, Colleagues, and Self
Triage Scale Standardization
Ultrasound-Guided Nerve Blocks
Ultrasound Guidelines: Emergency, Point-of-Care and Clinical Ultrasound Guidelines in Medicine
Ultrasound Services in the Emergency Department
Universal Bicycle Helmet Use
Universal Health Care Coverage
Unscheduled Procedural Sedation: A Multidisciplinary Consensus Practice Guideline
Unsolicited Medical Personnel Volunteering at Disaster Scenes
Urgent Care Centers
Use of Antitussive Medications in the Pediatric Population
Use of Droperidol in the Emergency Department
Use of High-Sensitivity Cardiac Troponin in the Emergency Department
Use of Medical Interpreters in the Emergency Department
Use of Nurse Implemented Order Sets
Use of Patient Restraints
Use of Peak Expiratory Flow Rate Monitoring for the Management of Asthma in Adults in the Emergency Department *
Use of Short Courses in Emergency Medicine as Criteria for Privileging or Employment
Use of Social Media by Emergency Physicians
Use of the Title "Doctor" in the Clinical Setting
Use of Transesophageal Echocardiography (TEE) in the ED for Shock, Cardiac Arrest, and Procedural Guidance
Verification of Endotracheal Tube Placement
Violence-Free Society
Violence Prevention and Intervention in Emergency Medical Services Systems
Withholding or Termination of Resuscitation in Pediatric Out-of-Hospital Traumatic Cardiopulmonary Arrest
Work Requirements for Medicaid Beneficiaries
Workforce Diversity in Health Care Settings
Worldwide Nuclear Disarmament
Writing Admission and Transition Orders *

2022 Model of the Clinical Practice of Emergency Medicine

The Core Content Task Force II created and endorsed the 2001 Model of the Clinical Practice of Emergency Medicine (EM Model) as published in the June 2001 Annals of Emergency Medicine and Academic Emergency Medicine.

The 2022 EM Model Task Force conducted the ninth review of the EM Model. Their work is built on the original 2001 EM Model and its subsequent revisions. The 2022 EM Model is published online in the June 2023 *Journal of Emergency Medicine*.

All changes that resulted from the 2022 EM Model Task Force are summarized in Figure 1. The three dimensions, as revised in 2022, are presented in Tables 1-4.

Preamble of the Core Content Task Force II, Adapted for the 2022 EM Model

In 1975, the American College of Emergency Physicians and the University Association for Emergency Medicine (now the Society for Academic Emergency Medicine; SAEM) conducted a practice analysis of the emerging field of Emergency Medicine. This work resulted in the development of the Core Content of Emergency Medicine, a listing of common conditions, symptoms, and diseases seen and evaluated in emergency departments. The Core Content listing was subsequently revised four times, expanding from 5 to 20 pages. However, these revisions had yet to have the benefit of empirical analysis of the developing specialty but relied solely upon expert opinion.

2022 EM Model Review Task Force	**2019 EM Model Review Task Force**	**2016 EM Model Review Task Force**	**2013 EM Model Review Task Force**
Michael S. Beeson, M.D., M.B.A., Chair Rahul Bhat, M.D. Joshua S. Broder, M.D. Theodore J. Gaeta, D.O., M.P.H. Alan Janssen, D.O., Erin R. Karl, M.D. Bruce M. Lo, M.D., M.B.A. Joel Moll, M.D. Laura Oh, M.D. Viral Patel, M.D. Loren Touma, D.O.	Michael S. Beeson, M.D., M.B.A., Chair Felix Ankel, M.D. Rahul Bhat, M.D. Joshua S. Broder, M.D. Diane L. Gorgas, M.D. Jonathan S. Jones, M.D. Sara Paradise Dimeo, M.D. Viral Patel, M.D. Elizabeth Schiller, M.D. Jacob W. Ufberg, M.D.	Francis L. Counselman, M.D., Chair Kavita Babu, M.D. Mary Ann Edens, M.D., M.P.H. Diane Gorgas, M.D. Cherri Hobgood, M.D. Catherine A. Marco, M.D. Eric Katz, M.D. Kevin Rodgers, M.D. Leonard Stallings, M.D. Michael C. Wadman, M.D.	Francis L. Counselman, M.D., Chair Marc A Borenstein, M.D. Carey D. Chisholm, M.D. Michael L. Epter, D.O. Sorabh Khandelwal, M.D. Chadd K. Kraus, D.O., M.P.H. Samuel D. Luber, M.D., M.P.H. Catherine A. Marco, M.D. Susan B. Promes, M.D. Gillian Schmitz, M.D.

2011 EM Model Review Task Force	**2009 EM Model Review Task Force**	**2007 EM Model Review Task Force**	**2005 EM Model Review Task Force**
Debra G. Perina, M.D., Chair Patrick Brunett, M.D David A. Caro, M.D. Douglas M. Char, M.D. Carey D. Chisholm, M.D. Francis L. Counselman, M.D. Jonathan Heidt, M.D. Samuel Keim, M.D., M.S. O. John Ma, M.D.	Debra G. Perina, M.D., Chair Michael S. Beeson, M.D Douglas M. Char, M.D. Francis L. Counselman, M.D. Samuel Keim, M.D., MS Douglas L. McGee, D.O. Carlo Rosen, M.D. Peter Sokolove, M.D. Steve Tantama, M.D.	Harold A. Thomas, M.D., Chair Michael S. Beeson, M.D Louis S. Binder, M.D. Patrick H. Brunett, M.D. Merle A. Carter, M.D. Carey D. Chisholm, M.D. Douglas L. McGee, D.O. Debra G. Perina, M.D. Michael J. Tocci, M.D.	Harold A. Thomas, M.D., Chair Louis S. Binder, M.D. Dane M. Chapman, M.D., Ph.D. David A. Kramer, M.D. Joseph LaMantia, M.D. Debra G. Perina, M.D. Philip H. Shayne, M.D. David P. Sklar, M.D. Camie J. Sorensen, M.D., M.P.H
2003 EM Model Review Task Force	**Core Content Task Force II**	**Advisory Panel to the Task Force**	
Robert S. Hockberger, M.D., Chair Louis S. Binder, M.D. Carey D. Chisholm, M.D. Jeremy T. Cushman, M.D. Stephen R. Hayden, M.D. David P. Sklar, M.D. Susan A. Stern, M.D. Robert W. Strauss, M.D. Harold A. Thomas, M.D. Diana R. Viravec, M.D.	Robert S. Hockberger, M.D., Chair Louis S. Binder, M.D. Mylissa A. Graber, M.D. Gwendolyn L. Hoffman, M.D. Debra G. Perina, M.D. Sandra M. Schneider, M.D. David P. Sklar, M.D. Robert W. Strauss, M.D. Diana R. Viravec, M.D.	William J. Koenig, M.D., Chair James J. Augustine, M.D. William P. Burdick, M.D. Wilma V. Henderson, M.D. Linda L. Lawrence, M.D. David B. Levy, D.O. Jane McCall, M.D. Michael A. Parnell, M.D. Kent T. Shoji, M.D.	

Following the 1997 revision of the Core Content listing, the contributing organizations felt that the list had become complex and unwieldy. Subsequently, they agreed to address this issue by commissioning a task force to re-evaluate the Core Content listing and the process for revising the list. As part of its final set of recommendations, the Core Content Task Force recommended that the specialty undertake a practice analysis of the clinical practice of Emergency Medicine. The results of a practice analysis would provide an empirical foundation for content experts to develop a core document that would represent the needs of the specialty.

Following the completion of its mission, the Core Content Task Force recommended commissioning another task force that would be charged with the oversight of a practice analysis of the specialty - Core Content Task Force II.

The practice analysis relied upon both empirical data and the advice of several expert panels and resulted in *The Model of the Clinical Practice of Emergency Medicine* (EM Model). The EM Model resulted from the need for a more integrated and representative presentation of the Core Content of Emergency Medicine. It was created through the collaboration of six organizations:

- American Board of Emergency Medicine (ABEM)
- American College of Emergency Physicians (ACEP)
- Council of Emergency Medicine Residency Directors (CORD)
- Emergency Medicine Residents' Association (EMRA)
- Residency Review Committee for Emergency Medicine (RRC-EM)
- Society for Academic Emergency Medicine (SAEM)

As requested by Core Content Task Force II, the six collaborating organizations reviewed the 2001 EM Model in 2002-2003 and developed a small list of proposed changes to the document. The changes were reviewed and considered by 10 representatives from the organizations, i.e., the 2003 EM Model Review Task Force. The Task Force's recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task

Force was published in the June 2005 *Annals of Emergency Medicine* and *Academic Emergency Medicine*.

The six collaborating organizations reviewed the 2002-2003 EM Model in 2005 and developed a small list of proposed changes to the document. The changes were reviewed and considered by nine representatives from the organizations, i.e., the 2005 EM Model Review Task Force. The Task Force's recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task Force was published in the October 2006 *Academic Emergency Medicine* and December 2006 *Annals of Emergency Medicine*.

The next regular review of the EM Model occurred in 2007. The 2007 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task Force was published in the August 2008 *Academic Emergency Medicine* and online-only in the August 2008 *Annals of Emergency Medicine*.

The fourth review of the EM Model occurred in 2009. The 2009 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task Force was published in the January 2011 *Academic Emergency Medicine* and online-only in *Annals of Emergency Medicine*.

The fifth review of the EM Model occurred in 2011. The 2011 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task Force was published online-only in the July 2012 *Academic Emergency Medicine*.

The sixth review of the EM Model occurred in 2013, with the addition of a seventh collaborating organization, the American Academy of Emergency Medicine (AAEM). The 2013 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The work of the Task Force was published online-only in the May 2014 *Academic Emergency Medicine*.

In 2014, the collaborating organizations decided to review the EM Model on a three-year review cycle. The seventh review of the EM Model occurred in 2016. The 2016 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The complete 2016 EM Model was published online in the March 2017 *Journal of Emergency Medicine*.

The eighth review of the EM Model occurred in 2019. The 2019 EM Model Review Task Force recommendations were approved by the collaborating organizations and were incorporated into the EM Model. The full 2019 EM Model was published online in the May 2020 *Journal of Emergency Medicine*.

The ninth review of the EM Model occurred in 2022, with the addition of an eighth collaborating organization, American Academy of Emergency Medicine/Resident Student Association. The collaborating organizations approved the 2022 EM Model Task Force recommendations and are incorporated into this document. The full 2022 EM Model was published online in the June 2023 *Journal of Emergency Medicine*.

There are three components to the EM Model: 1) an assessment of patient acuity; 2) a description of the tasks that must be performed to provide appropriate emergency medical care; and 3) a listing of medical knowledge, patient care, and procedural skills. Together these three

components describe the clinical practice of Emergency Medicine (EM) and differentiate it from the clinical practice of other specialties. The EM Model represents essential information and skills necessary for the clinical practice of EM by board-certified emergency physicians.

Patients often present to the emergency department with signs and symptoms rather than a known disease or disorder. Therefore, an emergency physician's approach to patient care begins with the recognition of patterns in the patient's presentation that point to a specific diagnosis or diagnoses. Pattern recognition is both the hallmark and cornerstone of the clinical practice of EM, guiding the diagnostic tests and therapeutic interventions during the entire patient encounter.

The Accreditation Council for Graduate Medical Education (ACGME) has implemented the ACGME Outcome Project to ensure that physicians are appropriately trained in the knowledge and skills of their specialties. The ACGME derived six general (core) competencies thought to be essential for any practicing physician: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.[1] The six general competencies are an integral part of the practice of Emergency Medicine and are embedded into the EM Model. To incorporate these competencies into the specialty of EM, an Emergency Medicine Competency Task Force demonstrated how these competencies are integrated into the EM Model.[2]

The EM Model is designed for use as the core document for the specialty. It provides the foundation for developing future medical school and residency curricula, certification examination specifications, continuing education objectives, research agendas, residency program review requirements, and other documents necessary for the functional operation of the specialty. In conjunction with the EM Model, these six core competencies construct a framework for evaluating physician performance and curriculum design to further refine and improve the education and training of competent emergency physicians.

The 2022 review of the EM Model resulted in significant changes and clarifications, including expansion of the ultrasound section of Category 19, Procedures and Skills Integral to the Practice of Emergency Medicine. Additionally, Category 20, Other Core Competencies of the Practice of Emergency Medicine, was significantly revised to provide more clarity regarding patient-centered care. The complete updated 2022 EM Model can be found on the websites of each of the eight collaborating organizations.

[1] Accreditation Council for Graduate Medical Education (ACGME). ACGME Core Competencies. (ACGME Outcome Project Website). Available at http://www.acgme.org/outcome/comp/compCPRL.asp

[2] Chapman DM, Hayden S, Sanders AB, et al. Integrating the Accreditation Council for Graduate Medical Education core competencies into The Model of the Clinical Practice of Emergency Medicine. Ann Emerg Med. 2004;43:756-769, and Acad Emerg Med. 2004;11:674-685.

Figure 1

Summary of 2022 EM Model Task Force Changes

Table 1. Matrix of physician tasks by patient acuity

Changed Team management to Physician-led team leadership and management

Changed Patient-centered communication skills to Interpersonal and patient-centered communication skills

Table 3. Physician task definitions

Added “race” to the definition of Modifying factors

Changed Team management to Physician-led team leadership and team management; changed definition to: Function as team leaders in support of physician-led teams. Provide appropriate supervision of nurse practitioners and physician assistants in team-based care. Coordinate, educate, or supervise members of the patient management team and utilize appropriate hospital resources.

Changed Patient-centered communication skills to Interpersonal and patient-centered communication skills; changed definition to: Establish rapport with and demonstrate empathy toward patients and their families; listen effectively to and build trust with patients and their families. Identify situations that require individualized communication or shared decision-making, such as goals of care, end of life care, and palliative options.

Table 4. Medical Knowledge, Patient Care, and Procedural Skills

Location	Description of Change
1.1.10	Added Hyperthermia (Critical, Emergent, Low)
1.3.27	Deleted Lethargy
1.3.28	Changed Lightheadedness/Dizziness to Lightheadedness
1.3.60	Added Agitation (Critical, Emergent, Low)
1.3.61	Added Hypo/Hyperglycemia (Critical, Emergent, Low)
2.2.1.2	Deleted Viral esophagitis
2.3.1.5	Added Toxin-induced hepatitis (Critical, Emergent)
2.3.3.3	Deleted Perihepatitis
2.8.2.2	Deleted Gluten enteropathy/Celiac disease
2.9.2.6	Added Ischemic colitis (Critical, Emergent)
2.9.4.2	Changed Diverticula to Diverticular disease (added Critical)
2.9.4.5	Added Perforation (Critical, Emergent)
2.12.1	Changed Bariatric surgery to Bariatric surgery complications
3.5.2.3	Added Takotsubo (Critical, Emergent)
3.9.2	Added Valvular stenosis/insufficiency (Critical, Emergent, Low)
3.10.1	Added complication after AICD
3.10.3	Added Extracorporeal membrane oxygenation (ECMO) (Critical)
4.1.1	Changed from Basil cell to Basil cell carcinoma

4.1.4	Changed from Squamous cell to Squamous cell carcinoma
4.2	Changed Ulcerative Lesions to Cutaneous Ulcers
4.2.1	Changed Decubitus to Decubitus ulcer
4.2.2	Changed from Venous stasis to Venous stasis ulcer
4.2.4	Added Arterial insufficiency ulcer (Low)
4.2.5	Added Calciphylaxis (Low)
4.3.1	Changed Atopic/Eczema to Eczema
4.3.2	Changed from Contact to Contact dermatitis
4.3.4	Changed Seborrhea to Seborrheic dermatitis
4.3.5	Added Diaper dermatitis (Low)
4.4.1.4	Changed Impetigo to Impetigo/Ecthyma
4.4.1.6	Added Spirochete/Rickettsia (Emergent, Low)
4.4.2.2	Changed Dermatophytes to Dermatophytes (tinea)
4.4.3.1	Added Pediculosis (Low)
4.4.3.2	Added Scabies (Low)
4.4.3.3	Added Bed bugs (Low)
4.4.4.1	Deleted Aphthous ulcers
4.4.4.2	Deleted Childhood exanthems
4.4.4.1.1	Added Herpes simplex (Low)
4.4.4.1.2	Added Herpes zoster (Low)
4.4.4.4	Added Hand-foot-mouth disease (Low)
4.5.4.1	Added Drug rash with eosinophilia and systemic symptoms syndrome (DRESS) (Critical, Emergent, Low)
4.6.5	Added Hidradenitis suppurativa (Low)
4.6.6	Added Lichen planus (Low)
4.6.7	Added Pyogenic granuloma (Low)
4.7	Changed Vesicular/Bullous Lesions to Vesicular/Bullous/Sloughing Conditions or Syndromes
4.7.1	Changed Pemphigus to Pemphigus vulgaris
4.7.6	Added Toxicodendron (Low)
4.8.1	Changed Henoch-Schönlein purpura (HSP) to Vasculitis (Emergent, Low)
4.8.1.1	Added Infectious (Critical, Emergent)
4.8.1.2	Added Drug-induced (Emergent, Low)
4.8.1.3	Added Autoimmune (Emergent, Low)
4.8.1.3.1	Added IgA vasculitis (Critical)
5.4.1.1.2.1	Added Euglycemic DKA (Emergent)
5.5.3	Deleted Malabsorption
5.8.1.1	Added Thyroid storm (Critical, Emergent)
5.8.2.1	Added Myxedema coma (Critical, Emergent)
6.1.1.1.1	Added Hymenoptera (Critical, Emergent, Low)
7.1.2	Changed Labyrinthitis to Inner ear disorders (Low)
7.1.3	Deleted Meniere's disease
7.1.8	Deleted perichondritis
7.2.1.8	Added Chemical exposure (Critical, Emergent, Low)
7.2.3.1	Deleted Choroiditis/Chorioretinitis
7.2.3.5	Added Vitreous hemorrhage (Emergent)
7.4.2.5	Added Aphthous ulcers (Low)
7.4.7	Deleted Peritonsillar abscess
7.4.7.1	Added Post-tonsillectomy bleeding (Critical, Emergent)

7.4.7.2	Added Peritonsillar abscess (Emergent)
8.2.1.4	Added Anticoagulation reversal (Critical, Emergent)
8.7.9	Added Chemotherapy complications (Critical, Emergent, Low)
8.7.10	Added Immunotherapy complications (Critical, Emergent, Low)
9.4.1	Changed Mucocutaneous lymph node syndrome (Kawasaki syndrome) to Kawasaki disease
9.6	Added Multisystem Inflammatory Syndrome in Children (Critical, Emergent, Low)
10.1.7.1	Changed Shock to Septic shock
10.1.10	Added Scarlet fever (Emergent, Low)
10.2	Changed Biological Warfare Agents to Bioterrorism Agents/Diseases
10.2.1	Added Class A agents (Critical, Emergent)
10.2.2	Added Other microorganisms, viruses, and toxins (Critical, Emergent)
10.5.5	Added Southern tick-associated rash illness (STARI) – (Emergent, Low)
10.6.12	Added COVID-19 (SARS-CoV2) – (Critical, Emergent, Low)
10.6.13	Added Parvovirus (fifth disease) – (Emergent, Low)
11.3.1.4	Changed Juvenile to Juvenile idiopathic arthritis
11.4.3	Added Compartment syndrome (See 18.1.14.2) – (Critical, Emergent)
11.6.1	Changed Fasciitis to Necrotizing infections (Critical, Emergent)
12.3.2	Changed Vascular to Migraine
12.3.4	Added Giant cell arteritis (Critical, Emergent)
12.5.5	Deleted Neuritis
12.5.5	Added Epidural abscess (Critical, Emergent)
12.9.1.6	Added Withdrawal (Critical, Emergent)
12.9.2	Changed Nonepileptiform to Nonepileptic seizure
12.14.1	Deleted Excited delirium syndrome
13.1.3.3	Added Chancres (Low)
13.1.5.4.1	Changed from Low to Emergent
13.7.5	Added Shoulder dystocia (Critical, Emergent)
14.1.8	Changed Medication-assisted treatment (MAT) to Medication for substance use disorder
14.6.1.3	Changed Elder to Vulnerable adult (Critical, Emergent)
14.6.3.1	Added Post-exposure prophylaxis (Emergent, Low)
14.8.2	Changed Hysteria/Conversion to Conversion disorder
15.9	Added Urologic Devices
15.9.1	Added Nephrostomy tube (Emergent, Low)
15.9.2	Added Malfunctioning indwelling catheter (Emergent, Low)
15.9.3	Added Ureteral stents (Emergent, Low)
15.10	Added Gender-affirming Procedural Complications (Critical, Emergent, Low)
16.1.1.3	Added Ludwig's angina (See 7.4.2.1) (Critical, Emergent)
16.4.2	Changed Bronchitis and bronchiolitis to Bronchitis
16.4.8	Added Bronchiolitis (Emergent, Low)
16.7.2.3	Changed Hospital-acquired pneumonia to Health care-associated pneumonia
16.8.1	Deleted Breast
16.8.2	Deleted Pulmonary
18.1.2.1	Changed Blunt aortic dissection/disruption to Blunt aortic injury/disruption

18.1.3.3.4	Added Radiation (Critical, Emergent, Low)
18.1.6.1.3	Added Increased intracranial pressure (Critical, Emergent)
18.1.14.2	Added (See 11.4.3)
19.1.1.1	Added Direct laryngoscopy
19.1.1.2	Added Video-assisted laryngoscopy
19.1.2.1	Added Flexible endoscopic techniques
19.1.5.1	Added CPAP/BiPAP
19.1.5.2	Added High flow oxygen
19.2.4.1	Changed Therapeutic hypothermia (or targeted temperature management) to Targeted temperature management
19.2.13	Added Neurocritical care resuscitation
19.4.2.6	Changed Thoracostomy to Thoracostomy (including small bore catheters)
19.4.6.6	Deleted Fasciotomy
19.4.9.1	Deleted Psychiatric screening examination
19.5	Ultrasound – *This section underwent revision and extensive reordering. The changes are too numerous to document using this format.*
20.0	Other Core Competencies of the Practice of Emergency Medicine - *This category underwent revision and extensive reordering. The changes are too numerous to document using this format.*

Table 1. Matrix of physician tasks by patient acuity

	Patient Acuity		
Physician Tasks	**Critical**	**Emergent**	**Lower Acuity**
Prehospital care Emergency stabilization Performance of focused history and physical examination Modifying factors Professional issues Legal issues Diagnostic studies Diagnosis Therapeutic interventions Pharmacotherapy Observation and reassessment Consultation Transitions of Care Prevention and education Documentation Task switching/Multiple patient care Physician-led team leadership and management Mass casualty/Disaster management Interpersonal and patient-centered communication skills Prognosis			

Table 2. Patient acuity definitions

Critical	Emergent	Lower Acuity
Patient presents with symptoms of a life-threatening illness or injury with a high probability of mortality if immediate intervention is not begun to prevent further airway, respiratory, hemodynamic, and/or neurologic instability.	Patient presents with symptoms of an illness or injury that may progress in severity or result in complications with a high probability for morbidity if treatment is not begun quickly.	Patient presents with symptoms of an illness or injury that have a low probability of progression to more serious disease or development of complications.

Table 3. Physician task definitions

Prehospital care	Participate actively in prehospital care; provide direct patient care or on-line or off-line medical direction or interact with prehospital medical providers; assimilate information from prehospital care into the assessment and management of the patient.
Emergency stabilization	Conduct primary assessment and take appropriate steps to stabilize and treat patients.
Performance of focused history and physical examination	Effectively interpret and evaluate the patient's symptoms and history; identify pertinent risk factors in the patient's history; provide a focused evaluation; interpret the patient's appearance, vital signs, and condition; recognize pertinent physical findings; perform techniques required for conducting the exam.
Modifying factors	Recognize age, gender, race, ethnicity, barriers to communication, socioeconomic status, underlying disease, gender identity, sexual orientation, and other factors that may affect patient management.
Professional issues	Understand and apply principles of professionalism and ethics pertinent to patient management.
Legal issues	Understand and apply legal concepts pertinent to the practice of EM.
Diagnostic studies	Select and perform the most appropriate diagnostic studies and interpret the results, e.g., electrocardiogram, emergency ultrasound, radiographic and laboratory tests.
Diagnosis	Develop a differential diagnosis and establish the most likely diagnoses in light of the history, physical, interventions, and test results.
Therapeutic interventions	Perform procedures and nonpharmacologic therapies, and counsel.
Pharmacotherapy	Select, prescribe, and be aware of adverse effects of appropriate pharmaceutical agents based upon relevant considerations such as intended effect, financial considerations, possible adverse effects, patient preferences, institutional policies, and clinical guidelines; and monitor and intervene in the event of adverse effects in the ED.
Observation and reassessment	Evaluate and re-evaluate the effectiveness of a patient's treatment or therapy, including addressing complications and potential errors; monitor, observe, manage, and maintain the stability of one or more patients who are at different stages in their workups.
Consultation	Collaborate with physicians and other professionals to help guide optimal management of patients.
Transitions of care	Arrange for patient admission, discharge (including follow-up plan), observation, or transfer and transitions of care as appropriate, and communicate these arrangements effectively with patients, family, and involved healthcare team members.

Prevention and education	Apply epidemiologic information to patients at risk; conduct patient education; select appropriate disease and injury prevention, and harm reduction techniques.
Documentation	Communicate patient care information in a concise and appropriate manner that facilitates quality care. This includes documentation and medical decision-making variables related to billing, coding, and reimbursement for patient care.
Task switching/Multiple patient care	Prioritize and implement the evaluation and management of multiple patients in the emergency department, including handling interruptions and task-switching, in order to provide optimal patient care.
Physician-led team leadership and management	Function as team leaders in support of physician-led teams. Provide appropriate supervision of nurse practitioners and physician assistants in team-based care. Coordinate, educate, or supervise members of the patient management team and utilize appropriate hospital resources.
Mass casualty/Disaster management	Understand and apply the principles of disaster and mass casualty management, including preparedness, triage, mitigation, response, and recovery.
Interpersonal and patient-centered communication skills	Establish rapport with and demonstrate empathy toward patients and their families; listen effectively and build trust with patients and their families. Identify situations that require individualized communication or shared decision-making, such as goals of care, end-of-life care, and palliative options.
Prognosis	Forecast the likely outcome of a medical disease or traumatic condition.

MEDICAL KNOWLEDGE, PATIENT CARE, AND PROCEDURAL SKILLS

As originally developed, the third dimension of the EM Model was called the Listing of Conditions and Components. The listing contained the fundamental conditions for which patients presented to emergency departments and was based on data collected by the National Center for Health Statistics at the Centers for Disease Control and Prevention (CDC) during 1995-1996. The CDC data were collected from 40,000 emergency department records statistically representative of 90.3 million emergency department visits in metropolitan and non-metropolitan short-stay or general hospitals in all 50 states and the District of Columbia. Frequency of occurrence was a primary factor in determining inclusion in the Listing of Conditions and Components. Frequency of occurrence, however, was not the sole determinant of inclusion, nor was the number of entries pertaining to a single topic representative of importance. The final list was developed by several expert panels of practicing emergency physicians based on three factors: 1) frequency of occurrence; 2) critical nature of patient presentation; and 3) other components of EM practice.

The Listing of Conditions and Components also contained two appendices. Appendix 1 outlined the diagnostic and/or therapeutic procedures and tests considered essential to the clinical practice of Emergency Medicine. Appendix 2 listed the other essential components and core competencies of EM practice.

With each Task Force review, the Listing of Conditions and Components has evolved to maintain consistency with the current clinical practice of EM. In 2011, it was determined that the contents of the two appendices represented core components of EM knowledge, which, when combined with the Listing of Conditions and Components, encompassed the universe of

knowledge that all practicing emergency physicians should possess. Consequently, the appendices were incorporated into the body of the document, and the entire section was renamed Medical Knowledge, Patient Care, and Procedural Skills (Table 4). This change strengthened the inherent link between the EM Model and the ACGME's six core competencies.

NOTE: The listing of Medical Knowledge, Patient Care, and Procedural Skills is not intended to be comprehensive. It is intended to be representative of the most frequent conditions seen, those with the most serious implications for patients presenting to the emergency department, and the core knowledge and skills required to provide safe and effective patient care.

Table 4. Medical Knowledge, Patient Care, and Procedural Skills

1.0 SIGNS, SYMPTOMS, AND PRESENTATIONS

		Critical	Emergent	Lower Acuity
1.1	**Abnormal Vital Signs**			
1.1.1	Hypothermia	X	X	X
1.1.2	Fever	X	X	X
1.1.3	Bradycardia	X	X	X
1.1.4	Tachycardia	X	X	
1.1.5	Bradypnea/Apnea	X	X	
1.1.6	Tachypnea	X	X	
1.1.7	Hypoxia	X	X	
1.1.8	Hypotension	X	X	
1.1.9	Hypertension	X	X	X
1.1.10	Hyperthermia	X	X	X
1.2	**Pain**			
1.2.1	Pain (unspecified)	X	X	X
1.2.2	Headache (See 12.3)	X	X	X
1.2.3	Eye pain		X	X
1.2.4	Chest pain	X	X	X
1.2.5	Abdominal pain	X	X	X
1.2.6	Pelvic and genital pain	X	X	X
1.2.7	Back pain	X	X	X
1.2.8	Chronic pain			X
1.2.9	Extremity pain	X	X	X
1.2.10	Neck pain	X	X	X
1.3	**General**			
1.3.1	Altered mental status	X	X	X
1.3.2	Anuria/Oliguria		X	
1.3.3	Ascites		X	X
1.3.4	Ataxia		X	X
1.3.5	Auditory disturbances			X
1.3.6	Bleeding	X	X	X
1.3.7	Congestion/Rhinorrhea			X
1.3.8	Constipation/Obstipation		X	X
1.3.9	Cough		X	X

1.3.10	Crying/Fussiness		X	X
1.3.11	Cyanosis	X		
1.3.12	Dehydration	X	X	
1.3.13	Diarrhea		X	X
1.3.14	Dysmenorrhea			X
1.3.15	Dysphagia		X	X
1.3.16	Dysuria			X
1.3.17	Edema		X	X
1.3.18	Failure to thrive		X	X
1.3.19	Fatigue/Malaise		X	X
1.3.20	Feeding problems			X
1.3.21	Hematemesis	X	X	
1.3.22	Hematuria		X	X
1.3.23	Hemoptysis	X	X	
1.3.24	Hiccup			X
1.3.25	Jaundice		X	
1.3.26	Joint swelling		X	X
1.3.27	Lightheadedness		X	X
1.3.28	Limp		X	X
1.3.29	Lymphadenopathy			X
1.3.30	Mechanical and indwelling devices, complications	X	X	X
1.3.31	Nausea/Vomiting		X	X
1.3.32	Occupational exposure		X	X
1.3.33	Palpitations	X	X	X
1.3.34	Paralysis	X	X	
1.3.35	Paresthesia/Dysesthesia		X	X
1.3.36	Poisoning	X	X	X
1.3.37	Pruritus		X	X
1.3.38	Rash	X	X	X
1.3.39	Rectal bleeding	X	X	X
1.3.40	Shock	X		
1.3.41	Shortness of breath	X	X	
1.3.42	Sore throat		X	X
1.3.43	Stridor	X	X	
1.3.44	Syncope/Near syncope	X	X	X
1.3.45	Tinnitus			X
1.3.46	Tremor		X	X
1.3.47	Urinary incontinence			X
1.3.48	Urinary retention		X	
1.3.49	Vaginal bleeding	X	X	X
1.3.50	Vaginal discharge			X
1.3.51	Visual disturbances		X	X
1.3.52	Weakness		X	X
1.3.53	Wheezing	X	X	
1.3.54	Toxidromes	X	X	X
1.3.55	Sudden unexpected infant death (SUID)	X		
1.3.56	Suicidal ideation	X	X	X
1.3.57	Brief resolved unexplained events (BRUE)	X	X	X
1.3.58	Intoxication syndromes	X	X	X
1.3.59	Postsurgical complications	X	X	X
1.3.60	Agitation	X	X	X

1.3.61	Hypo/Hyperglycemia	X	X	X

2.0 ABDOMINAL AND GASTROINTESTINAL DISORDERS

		Critical	Emergent	Lower Acuity
2.1	**Abdominal Wall**			
2.1.1	Hernias		X	X
2.1.2	Hematoma			X
2.2	**Esophagus**			
2.2.1	Infectious disorders			
	2.2.1.1 Candida (See 4.4.2.1, 7.4.6)		X	X
2.2.2	Inflammatory disorders			
	2.2.2.1 Esophagitis		X	X
	2.2.2.2 Gastroesophageal reflux (GERD)			X
	2.2.2.3 Toxic effects of caustic agents (See 17.1.16.1)			
	2.2.2.3.1 Acid	X	X	
	2.2.2.3.2 Alkali	X	X	
2.2.3	Motor abnormalities			
2.2.4	Structural disorders			
	2.2.4.1 Boerhaave's syndrome	X	X	
	2.2.4.2 Diverticula		X	X
	2.2.4.3 Foreign body		X	
	2.2.4.4 Hernias		X	X
	2.2.4.5 Mallory-Weiss syndrome	X	X	
	2.2.4.6 Stricture and stenosis		X	X
	2.2.4.7 Tracheoesophageal fistula	X	X	
	2.2.4.8 Varices	X	X	
2.2.5	Tumors		X	X
2.3	**Liver**			
2.3.1	Noninfectious hepatitis/Cirrhosis		X	X
	2.3.1.1 Alcoholic		X	X
	2.3.1.2 Biliary obstructive		X	
	2.3.1.3 Drug-induced		X	X
	2.3.1.4 Nonalcoholic steatohepatitis (NASH)			X
	2.3.1.5 Toxin-induced hepatitis	X	X	
2.3.2	Hepatorenal failure	X	X	
2.3.3	Infectious disorders		X	X
	2.3.3.1 Abscess		X	
	2.3.3.2 Hepatitis		X	
2.3.4	Tumors		X	X
2.3.5	Hepatic encephalopathy		X	X
2.4	**Gall Bladder and Biliary Tract**			
2.4.1	Cholangitis	X	X	
2.4.2	Cholecystitis	X	X	
2.4.3	Cholelithiasis/Choledocholithiasis		X	X
2.4.4	Tumors		X	X
2.5	**Pancreas**			
2.5.1	Pancreatitis	X	X	
2.5.2	Tumors		X	X

2.5.3	Pseudocyst			X
2.6	**Peritoneum**			
2.6.1	Spontaneous bacterial peritonitis	X	X	
2.6.2	Abdominal compartment syndrome	X	X	
2.7	**Stomach**			
2.7.1	Infectious disorders			X
2.7.2	Inflammatory disorders			
	2.7.2.1 Gastritis		X	X
2.7.3	Peptic ulcer disease		X	X
	2.7.3.1 Hemorrhage	X	X	
	2.7.3.2 Perforation	X	X	
2.7.4	Structural disorders			
	2.7.4.1 Congenital hypertrophic pyloric stenosis		X	
	2.7.4.2 Foreign body		X	X
2.7.5	Tumors		X	X
2.7.6	Gastroparesis		X	X
2.7.7	Cyclic vomiting syndrome (See 17.1.24.1.1)		X	X
2.8	**Small Bowel**			
2.8.1	Infectious disorders		X	X
2.8.2	Inflammatory disorders			
	2.8.2.1 Regional enteritis/Crohn's disease		X	X
2.8.3	Motor abnormalities			
	2.8.3.1 Obstruction	X	X	
	2.8.3.2 Paralytic ileus		X	
2.8.4	Structural disorders			
	2.8.4.1 Aortoenteric fistula	X		
	2.8.4.2 Congenital anomalies		X	X
	2.8.4.3 Intestinal malabsorption		X	X
	2.8.4.4 Meckel's diverticulum		X	X
2.8.5	Tumors		X	X
2.8.6	Vascular insufficiency	X	X	
2.9	**Large Bowel**			
2.9.1	Infectious disorders			
	2.9.1.1 Antibiotic-associated		X	
	2.9.1.2 Bacterial		X	X
	2.9.1.3 Parasitic		X	X
	2.9.1.4 Viral		X	X
2.9.2	Inflammatory disorders			
	2.9.2.1 Appendicitis		X	
	2.9.2.2 Necrotizing enterocolitis (NEC)	X	X	
	2.9.2.3 Radiation colitis		X	
	2.9.2.4 Ulcerative colitis		X	X
	2.9.2.5 Neutropenic enterocolitis/Typhlitis	X	X	
	2.9.2.6 Ischemic colitis	X	X	
2.9.3	Motor abnormalities			
	2.9.3.1 Hirschsprung's disease		X	X
	2.9.3.2 Irritable bowel			X

	2.9.3.3 Obstruction	X	X	
2.9.4	Structural disorders			
	2.9.4.1 Congenital anomalies		X	X
	2.9.4.2 Diverticular disease	X	X	X
	2.9.4.3 Intussusception	X	X	
	2.9.4.4 Volvulus	X	X	
	2.9.4.5 Perforation	X	X	
2.9.5	Tumors		X	X
2.10	**Rectum and Anus**			
2.10.1	Infectious disorders			
	2.10.1.1 Perianal/Anal abscess		X	X
	2.10.1.2 Perirectal abscess		X	
	2.10.1.3 Pilonidal cyst and abscess		X	X
2.10.2	Inflammatory disorders			
	2.10.2.1 Proctitis			X
2.10.3	Structural disorders			
	2.10.3.1 Anal fissure			X
	2.10.3.2 Anal fistula		X	X
	2.10.3.3 Congenital anomalies			X
	2.10.3.4 Foreign body		X	X
	2.10.3.5 Hemorrhoids			X
	2.10.3.6 Rectal prolapse		X	
2.10.4	Tumors		X	X
2.11	**Spleen**			
2.11.1	Asplenism		X	X
2.11.2	Splenomegaly			X
2.11.3	Vascular insufficiency/Infarction	X	X	X
2.12	**Specific Post-surgical Populations**			
2.12.1	Bariatric surgery complications	X	X	X
2.12.2	Ostomy		X	X

3.0 CARDIOVASCULAR DISORDERS

		Critical	Emergent	Lower Acuity
3.1	**Cardiopulmonary Arrest**	X		
3.2	**Congenital Abnormalities of the Cardiovascular System**	X	X	X
	3.2.1 Tetralogy of Fallot spells	X	X	
	3.2.2 Patent ductus arteriosus-dependent congenital heart anomalies	X	X	
3.3	**Disorders of Circulation**			
	3.3.1 Arterial			
	3.3.1.1 Aneurysm	X	X	X
	3.3.1.2 Dissection	X		
	3.3.1.2.1 Aortic	X	X	X
	3.3.1.2.2 Non-aortic	X	X	X
	3.3.1.3 Thromboembolism	X	X	
	3.3.2 Venous			
	3.3.2.1 Thromboembolism (See 16.6.2)	X	X	
3.4	**Disturbances of Cardiac Rhythm**			
	3.4.1 Cardiac dysrhythmias	X	X	X
	3.4.1.1 Ventricular	X	X	
	3.4.1.2 Supraventricular	X	X	X
	3.4.1.3 Pulseless electrical activity	X		
	3.4.2 Conduction disorders	X	X	X
3.5	**Diseases of the Myocardium, Acquired**			
	3.5.1 Cardiac failure	X	X	
	3.5.1.1 Cor pulmonale	X	X	
	3.5.1.2 High output	X	X	
	3.5.1.3 Low output	X	X	
	3.5.2 Cardiomyopathy	X	X	X
	3.5.2.1 Hypertrophic	X	X	X
	3.5.2.2 Dilated	X	X	X
	3.5.2.3 Takotsubo	X	X	
	3.5.3 Congestive heart failure	X	X	
	3.5.4 Coronary syndromes	X	X	
	3.5.5 Ischemic heart disease	X	X	
	3.5.6 Myocardial infarction	X	X	
	3.5.7 Myocarditis	X	X	X
	3.5.8 Ventricular aneurysm	X	X	X
3.6	**Diseases of the Pericardium**			
	3.6.1 Pericardial effusion/tamponade (See 18.1.2.6)	X	X	
	3.6.2 Pericarditis		X	X
3.7	**Hypertension**	X	X	X
	3.7.1 Asymptomatic hypertension			X
	3.7.2 Hypertensive emergency	X	X	

3.8	**Tumors**	X	X	
3.9	**Valvular Disorders**	X	X	X
3.9.1	Endocarditis	X	X	
3.9.2	Valvular stenosis/insufficiency	X	X	X
3.10	**Cardiovascular Devices**			
3.10.1	Pacemaker/Automatic implantable cardioverter-defibrillator (AICD) complication	X	X	X
3.10.2	Left ventricular assist device (LVAD)	X	X	X
3.10.3	Extracorporeal membrane oxygenation (ECMO) (See 19.2.11)	X		

4.0 CUTANEOUS DISORDERS

		Critical	Emergent	Lower Acuity
4.1	**Cancers of the Skin**			
4.1.1	Basal cell carcinoma			X
4.1.2	Kaposi's sarcoma			X
4.1.3	Melanoma			X
4.1.4	Squamous cell carcinoma			X
4.2	**Cutaneous Ulcers**			
4.2.1	Decubitus ulcer		X	X
4.2.2	Venous stasis ulcer			X
4.2.3	Diabetic foot ulcers		X	X
4.2.4	Arterial insufficiency ulcer			X
4.2.5	Calciphylaxis			X
4.3	**Dermatitis**			
4.3.1	Eczema			X
4.3.2	Contact dermatitis			X
4.3.3	Psoriasis			X
4.3.4	Seborrheic dermatitis			X
4.3.5	Diaper dermatitis			X
4.4	**Infections**			
4.4.1	Bacterial			
	4.4.1.1 Abscess		X	X
	4.4.1.2 Cellulitis		X	X
	4.4.1.3 Erysipelas		X	
	4.4.1.4 Impetigo/Ecthyma			X
	4.4.1.5 Necrotizing infection	X	X	
	4.4.1.6 Spirochete/Rickettsia		X	X
4.4.2	Fungal			
	4.4.2.1 Candida (See 2.2.1.1, 7.4.6)			X
	4.4.2.2 Dermatophytes (tinea)			X
4.4.3	Ectoparasites			X
	4.4.3.1 Pediculosis			X
	4.4.3.2 Scabies			X
	4.4.3.3 Bed bugs			X
4.4.4	Viral			
	4.4.4.1 Herpetic infections		X	X
	4.4.4.1.1 Herpes simplex (See 10.6.4, 13.1.3.1)			X
	4.4.4.1.2 Herpes zoster (See 10.6.5)			X
	4.4.4.2 Human papillomavirus (HPV) (See 13.1.3.2)			X
	4.4.4.3 Molluscum contagiosum			X
	4.4.4.4 Hand-foot-mouth disease			X
4.5	**Maculopapular Lesions**			
4.5.1	Erythema multiforme		X	X
4.5.2	Pityriasis rosea			X
4.5.3	Urticaria		X	X

4.5.4	Drug eruptions			X	X
	4.5.4.1 Drug rash with eosinophilia and systemic symptoms syndrome (DRESS)	X		X	X
4.6	**Papular/Nodular Lesions**				
4.6.1	Hemangioma/Lymphangioma				X
4.6.2	Lipoma				X
4.6.3	Sebaceous cyst				X
4.6.4	Erythema nodosum				X
4.6.5	Hidradenitis suppurativa				X
4.6.6	Lichen planus				X
4.6.7	Pyogenic granuloma				X
4.7	**Vesicular/Bullous/Sloughing Conditions or Syndromes**				
4.7.1	Pemphigus vulgaris			X	
4.7.2	Staphylococcal scalded skin syndrome	X		X	
4.7.3	Stevens-Johnson syndrome	X		X	
4.7.4	Toxic epidermal necrolysis	X		X	
4.7.5	Bullous pemphigoid			X	X
4.7.6	Toxicodendron				X
4.8	**Purpuric Rash**	X		X	X
4.8.1	Vasculitis			X	X
	4.8.1.1 Infectious	X		X	
	4.8.1.2 Drug-induced			X	X
	4.8.1.3 Autoimmune			X	X
	4.8.1.3.1 IgA vasculitis	X			

5.0 ENDOCRINE, METABOLIC, AND NUTRITIONAL DISORDERS

		Critical	Emergent	Lower Acuity
5.1	**Acid-base Disturbances**			
5.1.1	Metabolic or respiratory			
	5.1.1.1 Acidosis	X	X	
	5.1.1.2 Alkalosis	X	X	X
5.1.2	Mixed acid-base balance disorder	X	X	
5.2	**Adrenal Disease**			
5.2.1	Corticoadrenal insufficiency	X	X	
5.2.2	Cushing's syndrome		X	X
5.3	**Fluid and Electrolyte Disturbances**			
5.3.1	Calcium metabolism	X	X	X
5.3.2	Hypervolemia/Hypovolemia	X	X	X
5.3.3	Potassium metabolism	X	X	X
5.3.4	Sodium metabolism	X	X	X
5.3.5	Magnesium metabolism		X	X
5.3.6	Phosphorus metabolism		X	X
5.4	**Glucose Metabolism**			
5.4.1	Diabetes mellitus	X	X	X
	5.4.1.1 Complications in glucose metabolism			
	5.4.1.1.1 Hyperglycemia		X	X
	5.4.1.1.2 Diabetic ketoacidosis (DKA)	X	X	X
	5.4.1.1.2.1 Euglycemic DKA		X	
	5.4.1.1.3 Hyperosmolar hyperglycemic state	X	X	
	5.4.1.1.4 Hypoglycemia	X	X	
5.5	**Nutritional Disorders**			
5.5.1	Vitamin deficiencies			X
5.5.2	Wernicke-Korsakoff syndrome		X	
5.5.3	Malnutrition		X	X
5.6	**Parathyroid Disease**		X	X
5.7	**Pituitary Disorders**		X	X
5.7.1	Panhypopituitarism		X	
5.8	**Thyroid Disorders**			
5.8.1	Hyperthyroidism	X	X	X
	5.8.1.1 Thyroid storm	X	X	
5.8.2	Hypothyroidism	X	X	X
	5.8.2.1 Myxedema coma	X	X	
5.9	**Tumors of Endocrine Glands**			
5.9.1	Adrenal		X	X
	5.9.1.1 Pheochromocytoma	X	X	
5.9.2	Pituitary		X	X
5.9.3	Thyroid		X	X

6.0 ENVIRONMENTAL DISORDERS

		Critical	Emergent	Lower Acuity
6.1	**Bites and Envenomation** (See 18.1.3.2)			
6.1.1	Arthropods		X	X
6.1.1.1	Insects			X
6.1.1.1.1	Hymenoptera	X	X	X
6.1.1.2	Arachnids	X	X	X
6.1.2	Mammals		X	X
6.1.3	Marine organisms (See 17.1.20)	X	X	X
6.1.4	Reptiles	X	X	X
6.2	**Dysbarism**			
6.2.1	Air embolism	X	X	
6.2.2	Barotrauma	X	X	X
6.2.3	Decompression syndrome	X	X	
6.3	**Electrical Injury** (See 18.1.3.3.1)	X	X	X
6.3.1	Lightning	X	X	
6.4	**High-altitude Illness**			
6.4.1	Acute mountain sickness		X	X
6.4.2	High-altitude cerebral edema	X	X	
6.4.3	High-altitude pulmonary edema	X	X	
6.5	**Submersion Incidents**	X	X	X
6.6	**Temperature-related Illness**			
6.6.1	Heat	X	X	X
6.6.2	Cold	X	X	X
6.6.2.1	Frostbite		X	X
6.6.2.2	Hypothermia	X	X	
6.7	**Radiation Emergencies**	X	X	X

7.0 HEAD, EAR, EYE, NOSE, THROAT DISORDERS

		Critical	Emergent	Lower Acuity
7.1	**Ear**			
7.1.1	Foreign body		X	X
	7.1.1.1 Impacted cerumen			X
7.1.2	Inner ear disorders			X
7.1.3	Mastoiditis		X	
7.1.4	Otitis externa			X
	7.1.4.1 Infective			X
	7.1.4.1.1 Malignant		X	
7.1.5	Otitis media		X	X
7.1.6	Perforated tympanic membrane (See 18.1.11.2)			X
7.2	**Eye**			
7.2.1	External eye			
	7.2.1.1 Burn confined to eye (See 18.1.10.2)		X	
	7.2.1.2 Conjunctivitis			X
	7.2.1.3 Corneal abrasions (See 18.1.10.1)		X	X
	7.2.1.4 Disorders of lacrimal system		X	X
	7.2.1.5 Foreign body		X	X
	7.2.1.6 Disorders of the eyelids			X
	7.2.1.7 Keratitis		X	X
	7.2.1.8 Chemical exposure	X	X	X
7.2.2	Anterior pole			
	7.2.2.1 Glaucoma		X	X
	7.2.2.2 Hyphema (See 18.1.10.5)		X	X
	7.2.2.3 Iritis (See 18.1.10.8)		X	X
	7.2.2.4 Hypopyon		X	
7.2.3	Posterior pole			
	7.2.3.1 Optic neuritis		X	
	7.2.3.2 Papilledema	X	X	
	7.2.3.3 Retinal detachments and defects (See 18.1.10.7)		X	
	7.2.3.4 Retinal vascular occlusion		X	
	7.2.3.5 Vitreous hemorrhage		X	
7.2.4	Orbit			
	7.2.4.1 Cellulitis			
	7.2.4.1.1 Preseptal		X	
	7.2.4.1.2 Septal/Orbital		X	
	7.2.4.2 Endophthalmitis		X	
7.3	**Nose**			
7.3.1	Epistaxis	X	X	X
7.3.2	Foreign body		X	X
7.3.3	Rhinitis			X
7.3.4	Sinusitis			X
7.4	**Oropharynx/Throat**			
7.4.1	Dentalgia			X
7.4.2	Diseases of the oral soft tissue			
	7.4.2.1 Ludwig's angina (see 16.1.1.3)	X	X	

	7.4.2.2 Stomatitis			X
	7.4.2.3 Gingival and periodontal disorders		X	X
	7.4.2.4 Odontogenic infections/Abscesses		X	X
	7.4.2.5 Aphthous ulcers			X
7.4.3	Diseases of the salivary glands			
	7.4.3.1 Sialolithiasis		X	X
	7.4.3.2 Suppurative parotitis		X	
7.4.4	Foreign body	X	X	
7.4.5	Larynx/Trachea			
	7.4.5.1 Epiglottitis (See 16.1.1.2)	X	X	
	7.4.5.2 Laryngitis			X
	7.4.5.3 Tracheitis		X	X
	7.4.5.4 Tracheostomy complications	X	X	X
7.4.6	Oral candidiasis (See 2.2.1.1, 4.4.2.1)			X
7.4.7	Pharyngitis/Tonsillitis			X
	7.4.7.1 Post-tonsillectomy bleeding	X	X	
	7.4.7.2 Peritonsillar abscess		X	
7.4.8	Retropharyngeal abscess	X	X	
7.4.9	Temporomandibular joint disorders			X
7.5	**Tumors**	X	X	X

8.0 HEMATOLOGIC AND ONCOLOGIC DISORDERS

		Critical	Emergent	Lower Acuity
8.1	**Blood Transfusion**			
8.1.1	Complications	X	X	
8.2	**Hemostatic Disorders**			
8.2.1	Coagulation defects	X	X	X
8.2.1.1	Acquired	X	X	X
8.2.1.2	Hemophilias	X	X	X
8.2.1.3	Anticoagulation agents	X	X	X
8.2.1.4	Anticoagulation reversal	X	X	
8.2.2	Disseminated intravascular coagulation	X		
8.2.3	Platelet disorders	X	X	X
8.2.3.1	Thrombocytopenia		X	X
8.2.3.2	Idiopathic thrombocytopenic purpura	X	X	X
8.2.3.3	Thrombotic thrombocytopenic purpura	X	X	
8.3	**Lymphomas**		X	X
8.4	**Pancytopenia**	X	X	
8.5	**Red Blood Cell Disorders**			
8.5.1	Anemias			
8.5.1.1	Aplastic	X	X	
8.5.1.2	Hemoglobinopathies		X	X
8.5.1.2.1	Sickle cell anemia	X	X	X
8.5.1.2.2	Thalassemia		X	X
8.5.1.3	Hemolytic		X	
8.5.1.4	Hypochromic			
8.5.1.4.1	Iron deficiency		X	X
8.5.1.5	Megaloblastic		X	X
8.5.2	Polycythemia		X	X
8.5.3	Methemoglobinemia (See 17.1.21)	X	X	
8.6	**White Blood Cell Disorders**			
8.6.1	Leukemia		X	X
8.6.2	Multiple myeloma		X	X
8.6.3	Leukopenia		X	X
8.7	**Oncologic Emergencies**	X	X	X
8.7.1	Febrile neutropenia	X	X	X
8.7.2	Hypercalcemia of malignancy	X	X	X
8.7.3	Hyperviscosity syndrome	X	X	X
8.7.4	Malignant pericardial effusion	X	X	X
8.7.5	Spinal cord compression (See 12.10)	X	X	
8.7.6	Superior vena cava syndrome	X	X	
8.7.7	Tumor hemorrhage	X	X	X
8.7.8	Tumor lysis syndrome	X	X	
8.7.9	Chemotherapy complications	X	X	X

8.7.10	Immunotherapy complications	X	X	X

9.0 IMMUNE SYSTEM DISORDERS

			Critical	Emergent	Lower Acuity
9.1	**Collagen Vascular Disease**				
	9.1.1	Raynaud's disease			X
	9.1.2	Reactive arthritis (See 11.3.1.6)		X	X
	9.1.3	Rheumatoid arthritis (See 11.3.1.3)		X	X
	9.1.4	Scleroderma		X	X
	9.1.5	Systemic lupus erythematosus		X	X
	9.1.6	Vasculitis		X	X
9.2	**Hypersensitivity**				
	9.2.1	Allergic reaction		X	X
	9.2.2	Anaphylaxis	X		
	9.2.3	Angioedema	X	X	
	9.2.4	Drug allergies	X	X	X
9.3	**Transplant-related Problems**		X	X	X
	9.3.1	Immunosuppression		X	X
	9.3.2	Rejection	X	X	
9.4	**Immune Complex Disorders**			X	
	9.4.1	Kawasaki Disease		X	X
	9.4.2	Rheumatic fever		X	X
	9.4.3	Sarcoidosis		X	X
	9.4.4	Post-streptococcal glomerulonephritis (See 15.3.1)		X	
9.5	**Medication-induced Immunosuppression**		X	X	
	9.5.1	Chemotherapeutic agents	X	X	
	9.5.2	Steroids	X	X	
	9.5.3	Targeted immune modulators	X	X	
9.6	**Multisystem Inflammatory Syndrome in Children**		X	X	X

10.0 SYSTEMIC INFECTIOUS DISORDERS

		Critical	Emergent	Lower Acuity
10.1	**Bacterial**			
10.1.1	Bacterial food poisoning		X	X
10.1.1.1	Botulism	X	X	
10.1.2	Chlamydia		X	X
10.1.3	Gonococcus		X	X
10.1.4	Meningococcus	X	X	
10.1.5	Mycobacterium			
10.1.5.1	Atypical mycobacteria		X	X
10.1.5.2	Tuberculosis		X	X
10.1.6	Other bacterial diseases	X	X	
10.1.6.1	Gas gangrene (See 11.6.3)	X	X	
10.1.7	Sepsis/Bacteremia	X	X	
10.1.7.1	Septic shock	X		
10.1.7.2	Toxic shock syndrome	X	X	
10.1.8	Spirochetes			
10.1.8.1	Syphilis		X	X
10.1.9	Tetanus	X	X	
10.1.10	Scarlet fever		X	X
10.2	**Bioterrorism Agents/Diseases**	X	X	
10.2.1	Class A agents	X	X	
10.2.2	Other microorganisms, viruses, and toxins	X	X	
10.3	**Fungal Infections**		X	X
10.4	**Protozoan/Parasites**			
10.4.1	Malaria		X	
10.4.2	Toxoplasmosis		X	X
10.5	**Tick-borne**			
10.5.1	Anaplasmosis (Ehrlichiosis)		X	
10.5.2	Lyme disease		X	
10.5.3	Rocky Mountain spotted fever		X	
10.5.4	Babesiosis		X	
10.5.5	Southern tick-associated rash illness (STARI)		X	X
10.6	**Viral**		X	X
10.6.1	Infectious mononucleosis		X	X
10.6.2	Influenza/Parainfluenza		X	X
10.6.3	Arbovirus	X	X	X
10.6.4	Herpes simplex (See 4.4.4.1.1, 13.1.3.1)		X	X
10.6.5	Herpes zoster/Varicella (See 4.4.4.1.2)		X	X
10.6.6	HIV/AIDS	X	X	X
10.6.7	Rabies	X		
10.6.8	Roseola			X
10.6.9	Rubella			X
10.6.10	Measles	X	X	X
10.6.11	Mumps (Paramyxovirus)		X	X
10.6.12	COVID-19 (SARS-CoV2)	X	X	X

10.6.13 Parvovirus (fifth disease)		X	X
10.7 Emerging Infections/Pandemics	X	X	X
10.8 Drug Resistance	X	X	X

11.0 MUSCULOSKELETAL DISORDERS (NONTRAUMATIC)

		Critical	Emergent	Lower Acuity
11.1	**Bony Abnormalities**			
11.1.1	Aseptic/Avascular necrosis		X	X
11.1.2	Osteomyelitis		X	
11.1.3	Tumors		X	X
11.1.4	Atypical fractures		X	X
11.1.4.1	Osteoporotic		X	X
11.1.4.2	Tumor-related		X	X
11.1.4.3	Congenital disorders		X	X
11.2	**Disorders of the Spine**			
11.2.1	Disc disorders		X	X
11.2.2	Inflammatory/Infectious spondylopathies		X	X
11.2.3	Radiculopathy (See 12.7.3)		X	X
11.2.4	Spinal stenosis		X	X
11.2.5	Cervical pain	X	X	X
11.2.6	Thoracic pain	X	X	X
11.2.7	Lumbosacral pain	X	X	X
11.2.7.1	Cauda equina syndrome (See 18.1.15.1)	X	X	
11.2.7.2	Sacroiliitis			X
11.2.7.3	Sciatica		X	X
11.2.8	Discitis		X	X
11.3	**Joint Abnormalities**			
11.3.1	Arthritis			
11.3.1.1	Septic		X	
11.3.1.2	Crystal arthropathies		X	X
11.3.1.3	Rheumatoid (See 9.1.3)			X
11.3.1.4	Juvenile idiopathic arthritis			X
11.3.1.5	Osteoarthrosis			X
11.3.1.6	Reactive arthritis (See 9.1.2)		X	X
11.3.2	Developmental dysplasia of the hip		X	X
11.3.3	Slipped capital femoral epiphysis		X	
11.3.4	Synovitis		X	X
11.4	**Muscle Abnormalities**			
11.4.1	Myositis			X
11.4.2	Rhabdomyolysis	X	X	
11.4.3	Compartment syndrome (See 18.1.14.2)	X	X	
11.5	**Overuse Syndromes**			
11.5.1	Bursitis			X
11.5.2	Muscle strains			X
11.5.3	Peripheral nerve syndrome			X
11.5.3.1	Carpal tunnel syndrome			X
11.5.4	Tendinopathy			X
11.5.5	Stress reaction fracture		X	X
11.6	**Soft Tissue Infections**			

11.6.1	Necrotizing infections	X	X	
11.6.2	Felon		X	
11.6.3	Gangrene (See 10.1.6.1)	X	X	
11.6.4	Paronychia		X	X
11.6.5	Tenosynovitis		X	X

12.0 NERVOUS SYSTEM DISORDERS

		Critical	Emergent	Lower Acuity
12.1	**Cranial Nerve Disorders**			X
12.1.1	Idiopathic facial nerve paralysis (Bell's palsy)			X
12.1.2	Trigeminal neuralgia			X
12.2	**Demyelinating Disorders**	X	X	
12.2.1	Multiple sclerosis		X	X
12.3	**Headache** (See 1.2.2)	X	X	X
12.3.1	Tension			X
12.3.2	Migraine		X	X
12.3.3	Cluster		X	X
12.3.4	Giant cell arteritis	X	X	
12.4	**Hydrocephalus**		X	X
12.4.1	Normal pressure		X	X
12.4.2	Shunt complications		X	
12.5	**Infections/Inflammatory Disorders**			
12.5.1	Encephalitis	X	X	
12.5.2	Intracranial and intraspinal abscess	X	X	
12.5.3	Meningitis			
	12.5.3.1 Bacterial	X	X	
	12.5.3.2 Viral	X	X	X
	12.5.3.3 Fungal	X	X	X
12.5.4	Myelitis		X	
	12.5.4.1 Acute flaccid myelitis		X	
12.5.5	Epidural abscess	X	X	
12.6	**Movement Disorders**		X	X
12.6.1	Dystonic reaction		X	X
12.6.2	Chorea/Choreiform			X
12.6.3	Tardive dyskinesia			X
12.7	**Neuromuscular Disorders**			
12.7.1	Guillain-Barré syndrome	X	X	
12.7.2	Myasthenia gravis	X	X	X
12.7.3	Peripheral neuropathy (See 11.2.3)		X	
12.8	**Other Conditions of the Brain**			
12.8.1	Dementia (See 14.5.2)			X
12.8.2	Parkinson's disease			X
12.8.3	Idiopathic intracranial hypertension	X	X	
12.8.4	Cerebral venous sinus thrombosis	X	X	X
12.8.5	Posterior reversible encephalopathy syndrome (PRES)	X	X	
12.8.6	Transient global amnesia			X
12.9	**Seizure Disorders**			

12.9.1	Epileptiform	X	X	X
	12.9.1.1 Neonatal	X	X	
	12.9.1.2 Febrile	X	X	X
	12.9.1.3 Status epilepticus	X		
	12.9.1.4 Nonconvulsive	X	X	
	12.9.1.5 Drug-induced	X	X	
	12.9.1.6 Withdrawal	X	X	
12.9.2	Nonepileptic seizure			X
12.10 Spinal Cord Compression (See 8.7.5)		X	X	
12.11 Stroke				
12.11.1	Hemorrhagic			
	12.11.1.1 Intracerebral	X	X	
	12.11.1.2 Subarachnoid	X	X	
12.11.2	Ischemic			
	12.11.2.1 Embolic	X	X	
	12.11.2.2 Thrombotic	X	X	
12.12 Transient Cerebral Ischemia			X	X
12.13 Tumors		X	X	X
12.14 Delirium		X	X	X

13.0 OBSTETRICS AND GYNECOLOGY

		Critical	Emergent	Lower Acuity
13.1	**Female Genital Tract**			
13.1.1	Cervix			
13.1.1.1	Cervicitis and endocervicitis		X	X
13.1.1.2	Tumors			X
13.1.2	Infectious disorders			
13.1.2.1	Pelvic inflammatory disease		X	
13.1.2.1.1	Fitz-Hugh-Curtis syndrome		X	
13.1.2.1.2	Tuboovarian abscess		X	
13.1.2.2	Urethritis			X
13.1.2.3	Gangrene of perineum	X	X	
13.1.3	Lesions			
13.1.3.1	Herpes simplex (See 4.4.4.1.1, 10.6.4)			X
13.1.3.2	Human papillomavirus (HPV) (See 4.4.4.2)			X
13.1.3.3	Chancres			X
13.1.4	Ovary			
13.1.4.1	Cyst			X
13.1.4.2	Torsion		X	
13.1.4.3	Tumors		X	X
13.1.5	Uterus			
13.1.5.1	Abnormal bleeding		X	X
13.1.5.2	Endometriosis			X
13.1.5.3	Prolapse			X
13.1.5.4	Tumors		X	X
13.1.5.4.1	Gestational trophoblastic disease		X	
13.1.5.4.2	Leiomyoma			X
13.1.6	Vagina and vulva			
13.1.6.1	Bartholin's cyst		X	X
13.1.6.2	Foreign body		X	X
13.1.6.3	Vaginitis/Vulvovaginitis			X
13.2	**Normal Pregnancy**			X
13.3	**Complications of Pregnancy**			
13.3.1	Abortion		X	
13.3.2	Ectopic pregnancy	X	X	
13.3.3	Hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome	X	X	
13.3.4	Hemorrhage, antepartum			
13.3.4.1	Abruptio placentae (See 18.2.1)	X	X	
13.3.4.2	Placenta previa	X	X	
13.3.5	Hyperemesis gravidarum		X	X
13.3.6	Gestational hypertension		X	X
13.3.6.1	Eclampsia	X	X	
13.3.6.2	Preeclampsia		X	
13.3.7	Infections		X	
13.3.8	Rh isoimmunization		X	

13.3.9	First trimester bleeding	X	X	X
13.3.10	Gestational diabetes		X	X
13.4	**High-risk Pregnancy**	X	X	
13.4.1	Assisted reproductive therapies	X	X	X
13.4.2	Pre-existing medical problems	X	X	X
13.5	**Normal Labor and Delivery**		X	X
13.6	**Complications of Labor**			
13.6.1	Fetal distress	X		
13.6.2	Premature labor (See 18.2.3)		X	
13.6.3	Premature rupture of membranes		X	
13.6.4	Rupture of uterus (See 18.2.4)	X		
13.7	**Complications of Delivery**			
13.7.1	Malposition of fetus	X	X	
13.7.2	Nuchal cord	X		
13.7.3	Prolapse of cord	X		
13.7.4	Amniotic fluid embolism	X	X	
13.7.5	Shoulder dystocia	X	X	
13.8	**Postpartum Complications**			
13.8.1	Endometritis		X	
13.8.2	Hemorrhage	X	X	
13.8.3	Mastitis		X	X
13.8.4	Pituitary infarction	X	X	
13.9	**Contraception**		X	X

14.0 PSYCHOBEHAVIORAL DISORDERS

		Critical	Emergent	Lower Acuity
14.1	**Substance Use Disorders**			
14.1.1	Alcohol use disorder (See 17.1.1)	X	X	X
14.1.2	Illicit drug use	X	X	X
14.1.3	Prescription drug use	X	X	X
	14.1.3.1 Drug diversion			X
14.1.4	Tobacco use disorder			X
14.1.5	Withdrawal syndromes	X	X	X
14.1.6	Opioid use disorder (See 17.1.2.3)	X	X	X
14.1.7	Stimulant use disorder	X	X	X
14.1.8	Medication for substance use disorder		X	X
14.2	**Mood Disorders and Thought Disorders**			
14.2.1	Acute psychosis	X	X	
14.2.2	Bipolar disorder		X	X
14.2.3	Depression		X	X
	14.2.3.1 Suicidal risk	X	X	
14.2.4	Grief reaction			X
14.2.5	Schizophrenia		X	X
14.3	**Factitious Disorders**		X	X
14.4	**Neurotic Disorders**			
14.4.1	Anxiety/Panic			X
14.4.2	Obsessive compulsive			X
14.4.3	Phobic			X
14.4.4	Post-traumatic stress			X
14.5	**Organic Psychoses**			
14.5.1	Chronic organic psychotic conditions			X
	14.5.1.1 Alcoholic psychoses		X	X
	14.5.1.2 Drug psychoses		X	X
14.5.2	Dementia (See 12.8.1)			X
14.6	**Patterns of Violence/Abuse/Neglect**			
14.6.1	Interpersonal violence			
	14.6.1.1 Child	X	X	X
	14.6.1.2 Intimate partner	X	X	X
	14.6.1.3 Vulnerable adult	X	X	
	14.6.1.4 Elder	X	X	X
14.6.2	Homicidal risk	X	X	
14.6.3	Sexual assault		X	
	14.6.3.1 Post-exposure prophylaxis		X	X
14.6.4	Staff/Patient safety		X	
14.6.5	Human trafficking		X	X
14.7	**Personality Disorders**			X
14.8	**Psychosomatic Disorders**			
14.8.1	Hypochondriasis			X

14.8.2	Conversion disorder			X
14.9	**Feeding and Eating Disorders**	X	X	X

15.0 RENAL AND UROGENITAL DISORDERS

		Critical	Emergent	Lower Acuity
15.1	**Acute and Chronic Renal Failure**	X	X	X
15.2	**Complications of Dialysis**	X	X	
15.2.1	Vascular	X	X	X
15.2.2	Peritoneal	X	X	X
15.3	**Glomerular Disorders**			
15.3.1	Glomerulonephritis (See 9.4.4)		X	X
15.3.2	Nephrotic syndrome		X	X
15.4	**Infection**			
15.4.1	Cystitis			X
15.4.2	Pyelonephritis		X	
15.4.3	Asymptomatic bacteriuria			X
15.5	**Male Genital Tract**			
15.5.1	Genital lesions			X
15.5.2	Hernias		X	X
15.5.3	Inflammation/Infection			
15.5.3.1	Balanitis/Balanoposthitis		X	X
15.5.3.2	Epididymitis/Orchitis		X	X
15.5.3.3	Gangrene of the perineum (Fournier's gangrene)	X	X	
15.5.3.4	Prostatitis		X	X
15.5.3.5	Urethritis			X
15.5.4	Structural			
15.5.4.1	Paraphimosis/Phimosis		X	
15.5.4.2	Priapism		X	
15.5.4.2.1	Medication induced		X	X
15.5.4.3	Prostatic hypertrophy (BPH)			X
15.5.4.4	Torsion		X	
15.5.5	Testicular masses			X
15.6	**Nephritis**		X	X
15.6.1	Hemolytic uremic syndrome		X	
15.7	**Structural Disorders**			
15.7.1	Calculus of urinary tract		X	X
15.7.2	Obstructive uropathy	X	X	
15.7.3	Polycystic kidney disease			X
15.8	**Tumors**			X
15.9	**Urologic Devices**			
15.9.1	Nephrostomy tube		X	X
15.9.2	Malfunctioning indwelling catheter		X	X
15.9.3	Ureteral stents		X	X
15.10	**Gender Affirming Procedural Complications**	X	X	X

16.0 THORACIC-RESPIRATORY DISORDERS

		Critical	Emergent	Lower Acuity
16.1	**Acute Upper Airway Disorders**			
16.1.1	Infections			
	16.1.1.1 Croup		X	
	16.1.1.2 Epiglottitis (See 7.4.5.1)	X	X	
	16.1.1.3 Ludwig's angina (See 7.4.2.1)	X	X	
16.1.2	Obstruction/Foreign body (See 16.4.7)	X		
16.2	**Disorders of Pleura, Mediastinum, and Chest Wall**			
16.2.1	Costochondritis			X
16.2.2	Mediastinitis	X	X	
16.2.3	Pleural effusion		X	X
16.2.4	Pleuritis			X
16.2.5	Pneumomediastinum		X	
16.2.6	Pneumothorax (See 18.1.2.7)			
	16.2.6.1 Simple		X	
	16.2.6.2 Tension	X		
	16.2.6.3 Open	X		
16.2.7	Empyema		X	X
16.3	**Acute Respiratory Distress Syndrome**	X	X	
16.4	**Obstructive/Restrictive Lung Disease**			
16.4.1	Asthma/Reactive airway disease	X	X	
16.4.2	Bronchitis		X	X
16.4.3	Bronchopulmonary dysplasia		X	X
16.4.4	Chronic obstructive pulmonary disease	X	X	X
16.4.5	Cystic fibrosis	X	X	X
16.4.6	Environmental/Industrial exposure	X	X	X
16.4.7	Foreign body (See 16.1.2)	X	X	
16.4.8	Bronchiolitis		X	X
16.5	**Physical and Chemical Irritants/Insults**			
16.5.1	Pneumoconiosis		X	X
16.5.2	Toxic effects of gases, fumes, vapors (See 18.1.3.3.2)	X	X	X
16.6	**Pulmonary Embolism/Infarct**			
16.6.1	Septic emboli	X	X	
16.6.2	Venous thromboembolism (See 3.3.2.1)	X	X	X
	16.6.2.1 Massive and submassive embolism	X	X	
16.6.3	Fat emboli	X	X	
16.7	**Pulmonary Infections**			
16.7.1	Lung abscess		X	
16.7.2	Pneumonia			
	16.7.2.1 Aspiration	X	X	
	16.7.2.2 Community-acquired	X	X	X
	16.7.2.3 Healthcare-associated pneumonia	X	X	X
	16.7.2.4 Pneumocystis	X	X	X

16.7.3	Pulmonary tuberculosis		X	
16.7.4	Respiratory syncytial virus (RSV)	X	X	X
16.7.5	Pertussis	X	X	X
16.8	**Tumors**		X	X
16.9	**Pulmonary Hypertension**	X	X	X

17.0 TOXICOLOGIC DISORDERS

		Critical	Emergent	Lower Acuity
17.1	**Drug and Chemical Classes**			
17.1.1	Alcohol (See 14.1.1)			
	17.1.1.1 Ethanol	X	X	X
	17.1.1.2 Ethylene glycol	X	X	
	17.1.1.3 Isopropyl	X	X	X
	17.1.1.4 Methanol	X	X	
17.1.2	Analgesics			
	17.1.2.1 Acetaminophen	X	X	
	17.1.2.2 Nonsteroidal anti-inflammatories (NSAIDS)		X	X
	17.1.2.3 Opioids (See 14.1.6)	X	X	
	17.1.2.4 Salicylates	X	X	
17.1.3	Anticholinergics	X	X	
	17.1.3.1 Antihistamines		X	
17.1.4	Anticoagulants/Antithrombotics/Antiplatelets	X	X	
	17.1.4.1 Direct thrombin inhibitors	X		
	17.1.4.2 Factor Xa inhibitors	X		
	17.1.4.3 Heparins	X	X	
	17.1.4.4 Vitamin K antagonists	X		X
17.1.5	Anticonvulsants	X	X	
17.1.6	Antidepressants	X	X	
	17.1.6.1 Bupropion		X	
	17.1.6.2 Selective serotonin reuptake inhibitors		X	X
	17.1.6.3 Tricyclic antidepressants	X	X	
17.1.7	Antiemetics		X	
17.1.8	Antimicrobials			
	17.1.8.1 Antibiotics		X	X
	17.1.8.1.1 Isoniazid	X	X	
	17.1.8.2 Antimalarials	X	X	X
	17.1.8.3 Antiretrovirals	X	X	X
17.1.9	Antipsychotics	X	X	
17.1.10	Carbon monoxide	X	X	
17.1.11	Cardiovascular drugs			
	17.1.11.1 Antiarrhythmics	X	X	
	17.1.11.1.1 Digoxin	X	X	
	17.1.11.2 Antihypertensives	X	X	
	17.1.11.2.1 Central acting	X	X	
	17.1.11.2.2 Peripheral Acting	X	X	
	17.1.11.3 Beta blockers	X	X	
	17.1.11.4 Calcium channel blockers	X	X	
17.1.12	Cholinergics	X	X	
	17.1.12.1 Nerve agents	X	X	
	17.1.12.2 Organophosphates	X	X	
17.1.13	Cyanides, hydrogen sulfide	X	X	
17.1.14	Heavy metals	X	X	
17.1.15	Herbicides, insecticides, and rodenticides	X	X	
17.1.16	Household/Industrial chemicals	X	X	X
	17.1.16.1 Caustic agents (See 2.2.2.3)	X	X	

	17.1.16.2 Hydrocarbons	X	X	
	17.1.16.3 Inhaled irritants	X	X	
17.1.17	Hypoglycemics/Insulin	X	X	
17.1.18	Lithium	X	X	X
17.1.19	Local anesthetics	X	X	
17.1.20	Marine toxins (See 6.1.3)	X	X	X
17.1.21	Methemoglobinemia (See 8.5.3)	X	X	
17.1.22	Mushrooms/Poisonous plants	X	X	
17.1.23	Nutritional supplements		X	X
	17.1.23.1 Iron	X	X	
	17.1.23.2 Performance enhancing and weight-loss drugs	X	X	X
17.1.24	Recreational drugs	X	X	X
	17.1.24.1 Cannabis			X
	17.1.24.1.1 Cannabinoid hyperemesis syndrome/Cyclic vomiting (See 2.7.7)			X
	17.1.24.2 Synthetic cannabinoids	X	X	X
	17.1.24.3 Hallucinogens	X	X	X
	17.1.24.4 GHB	X	X	X
17.1.25	Sedatives/Hypnotics	X	X	
17.1.26	Stimulants/Sympathomimetics	X	X	
	17.1.26.1 Amphetamines	X	X	
	17.1.26.2 Cocaine	X	X	X

18.0 TRAUMATIC DISORDERS

		Critical	Emergent	Lower Acuity
18.1	**Trauma**			
18.1.1	Abdominal trauma			
18.1.1.1	Diaphragm	X	X	
18.1.1.2	Hollow viscus	X	X	
18.1.1.3	Penetrating	X	X	
18.1.1.4	Retroperitoneum	X	X	
18.1.1.5	Solid organ	X	X	
18.1.1.6	Vascular	X	X	
18.1.1.7	Abdominal wall		X	X
18.1.2	Thoracic trauma			
18.1.2.1	Blunt aortic injury/disruption	X		
18.1.2.2	Contusion			
18.1.2.2.1	Cardiac	X	X	X
18.1.2.2.2	Pulmonary	X	X	
18.1.2.3	Fracture			
18.1.2.3.1	Clavicle		X	X
18.1.2.3.2	Ribs/Flail chest	X	X	X
18.1.2.3.3	Sternum		X	X
18.1.2.3.4	Scapula		X	X
18.1.2.4	Hemothorax	X	X	
18.1.2.5	Penetrating chest trauma	X	X	
18.1.2.6	Pericardial tamponade (See 3.6.1)	X		
18.1.2.7	Pneumothorax (See 16.2.6)			
18.1.2.7.1	Simple		X	
18.1.2.7.2	Tension	X		
18.1.2.7.3	Open	X		
18.1.3	Cutaneous trauma			
18.1.3.1	Avulsions		X	X
18.1.3.2	Bite wounds (See 6.1)		X	X
18.1.3.3	Burns			
18.1.3.3.1	Electrical (See 6.3)	X	X	X
18.1.3.3.2	Chemical (See 16.5.2)	X	X	X
18.1.3.3.3	Thermal	X	X	X
18.1.3.3.4	Radiation	X	X	X
18.1.3.4	Lacerations		X	X
18.1.3.5	Puncture wounds		X	X
18.1.3.6	Nail injuries			X
18.1.4	Facial trauma			X
18.1.4.1	Dental		X	X
18.1.4.2	Le Fort	X	X	X
18.1.4.3	Mandibular		X	X
18.1.4.4	Orbital		X	X
18.1.4.5	Nasal			X
18.1.4.5.1	Septal hematoma		X	
18.1.4.6	Zygomaticomaxillary complex			X
18.1.5	Genitourinary trauma			
18.1.5.1	Bladder		X	
18.1.5.2	External genitalia		X	
18.1.5.3	Renal		X	X

	18.1.5.4 Ureteral		X	
	18.1.5.5 Urethral		X	X
18.1.6	Head trauma			
	18.1.6.1 Intracranial injury	X	X	
	18.1.6.1.1 Concussion		X	X
	18.1.6.1.2 Intracranial hemorrhage	X	X	
	18.1.6.1.3 Increased intracranial pressure	X	X	
	18.1.6.2 Scalp lacerations/Avulsions		X	X
	18.1.6.3 Skull fractures		X	X
18.1.7	Spine trauma			
	18.1.7.1 Dislocations/Subluxations	X	X	
	18.1.7.2 Fractures	X	X	X
	18.1.7.3 Sprains/Strains			X
18.1.8	Extremity bony trauma			
	18.1.8.1 Dislocations/Subluxations		X	
	18.1.8.2 Fractures (open and closed)		X	X
18.1.9	Neck trauma			
	18.1.9.1 Laryngotracheal injuries	X	X	
	18.1.9.2 Penetrating neck trauma	X	X	
	18.1.9.3 Vascular injuries	X	X	
	18.1.9.4 Strangulation	X	X	X
18.1.10	Ophthalmologic trauma			
	18.1.10.1 Corneal abrasions/Lacerations (See 7.2.1.3)		X	X
	18.1.10.2 Corneal burns (See 7.2.1.1)			
	18.1.10.2.1 Acid		X	
	18.1.10.2.2 Alkali		X	
	18.1.10.2.3 Ultraviolet		X	X
	18.1.10.3 Periorbital lacerations		X	
	18.1.10.3.1 Eyelid		X	
	18.1.10.3.2 Lacrimal duct		X	
	18.1.10.4 Foreign body (See 19.4.4.8)		X	
	18.1.10.5 Hyphema (See 7.2.2.2)		X	
	18.1.10.6 Penetrating globe injuries		X	
	18.1.10.7 Retinal detachments (See 7.2.3.3)		X	
	18.1.10.8 Traumatic iritis (See 7.2.2.3)		X	X
	18.1.10.9 Retrobulbar hematoma		X	
18.1.11	Otologic trauma			
	18.1.11.1 Hematoma		X	X
	18.1.11.2 Perforated tympanic membrane (See 7.1.6)			X
18.1.12	Pediatric fractures			
	18.1.12.1 Epiphyseal		X	X
	18.1.12.1.1 Salter-Harris classification		X	X
	18.1.12.2 Greenstick		X	
	18.1.12.3 Torus			X
	18.1.12.4 Apophyseal avulsion			X
18.1.13	Pelvic fracture	X	X	
18.1.14	Soft-tissue extremity injuries			
	18.1.14.1 Amputations/Replantation		X	
	18.1.14.2 Compartment syndromes (See 11.4.3)		X	
	18.1.14.3 High-pressure injection		X	

		18.1.14.4 Injuries to joints		X	X
		18.1.14.5 Penetrating trauma		X	X
		18.1.14.6 Periarticular			X
		18.1.14.7 Sprains/Strains			X
		18.1.14.8 Tendon injuries			
		18.1.14.8.1 Lacerations/Transections		X	
		18.1.14.8.2 Ruptures		X	X
		18.1.14.9 Vascular injuries	X	X	
	18.1.15	Spinal cord and nervous system trauma			
		18.1.15.1 Cauda equina syndrome (See 11.2.7.1)	X	X	
		18.1.15.2 Injury to nerve roots		X	X
		18.1.15.3 Peripheral nerve injury		X	X
		18.1.15.4 Spinal cord injury	X	X	X
		18.1.15.4.1 Spinal cord injury without radiologic abnormality (SCIWORA)		X	
18.2	**Trauma in Pregnancy**				
	18.2.1	Abruptio placentae (See 13.3.4.1)	X	X	
	18.2.2	Resuscitative hysterotomy (See 19.4.8.2)	X		
	18.2.3	Premature labor (See 13.6.2)		X	
	18.2.4	Rupture of uterus (See 13.6.4)	X		
18.3	**Multi-system Trauma**		X	X	
	18.3.1	Blast injury	X	X	
	18.3.2	Falls	X	X	X
	18.3.3	Motor vehicle collision	X	X	X
	18.3.4	Assault	X	X	X

19.0 PROCEDURES AND SKILLS INTEGRAL TO THE PRACTICE OF EMERGENCY MEDICINE

19.1 Airway Techniques

- 19.1.1 Intubation
  - 19.1.1.1 Direct laryngoscopy
  - 19.1.1.2 Video-assisted laryngoscopy
- 19.1.2 Airway adjuncts
  - 19.1.2.1 Flexible endoscopic techniques
- 19.1.3 Surgical airway
- 19.1.4 Mechanical ventilation
- 19.1.5 Non-invasive ventilatory management
  - 19.1.5.1 CPAP/BiPAP
  - 19.1.5.2 High flow oxygen
- 19.1.6 Ventilatory monitoring

19.2 Resuscitation

- 19.2.1 Cardiopulmonary resuscitation
- 19.2.2 Neonatal resuscitation
- 19.2.3 Pediatric resuscitation
- 19.2.4 Post-resuscitative care
  - 19.2.4.1 Targeted temperature management
- 19.2.5 Blood, fluid, and component therapy
- 19.2.6 Arterial catheter insertion
- 19.2.7 Central venous access
- 19.2.8 Intraosseous line placement
- 19.2.9 Defibrillation
- 19.2.10 Thoracotomy
- 19.2.11 Extracorporeal membrane oxygenation (ECMO) (See 3.10.3)
- 19.2.12 Thermoregulation procedures
- 19.2.13 Neurocritical care resuscitation

19.3 Anesthesia and Acute Pain Management

- 19.3.1 Regional anesthesia
- 19.3.2 Procedural sedation
- 19.3.3 Analgesia

19.4 Diagnostic and Therapeutic Procedures

- 19.4.1 Abdominal and gastrointestinal
  - 19.4.1.1 Anoscopy
  - 19.4.1.2 Excision of thrombosed hemorrhoid
  - 19.4.1.3 Gastrostomy tube replacement
  - 19.4.1.4 Nasogastric tube
  - 19.4.1.5 Paracentesis
  - 19.4.1.6 Mechanical control of upper gastrointestinal bleeding
- 19.4.2 Cardiovascular and thoracic
  - 19.4.2.1 Cardiac pacing
  - 19.4.2.2 Cardioversion
  - 19.4.2.3 ECG interpretation

- 19.4.2.4 Pericardiocentesis
- 19.4.2.5 Thoracentesis
- 19.4.2.6 Thoracostomy (including small bore catheters)

19.4.3 Cutaneous
- 19.4.3.1 Escharotomy
- 19.4.3.2 Incision and drainage
- 19.4.3.3 Trephination, nails
- 19.4.3.4 Wound closure techniques
- 19.4.3.5 Wound management

19.4.4 Head, ear, eye, nose, and throat
- 19.4.4.1 Control of epistaxis
- 19.4.4.2 Drainage of peritonsillar abscess
- 19.4.4.3 Laryngoscopy
- 19.4.4.4 Lateral canthotomy
- 19.4.4.5 Slit lamp examination
- 19.4.4.6 Tonometry
- 19.4.4.7 Tooth stabilization
- 19.4.4.8 Corneal foreign body removal (See 18.1.10.4)
- 19.4.4.9 Drainage of hematoma

19.4.5 Systemic infectious
- 19.4.5.1 Personal protection (equipment and techniques)
- 19.4.5.2 Universal precautions and exposure management

19.4.6 Musculoskeletal
- 19.4.6.1 Arthrocentesis
- 19.4.6.2 Compartment pressure measurement
- 19.4.6.3 Fracture/Dislocation immobilization techniques
- 19.4.6.4 Fracture/Dislocation reduction techniques
- 19.4.6.5 Spine immobilization techniques

19.4.7 Nervous system
- 19.4.7.1 Lumbar puncture

19.4.8 Obstetrics and gynecology
- 19.4.8.1 Delivery of newborn
- 19.4.8.2 Resuscitative hysterotomy (See 18.2.2)
- 19.4.8.3 Sexual assault examination

19.4.9 Psychobehavioral
- 19.4.9.1 Violent patient management/Restraint

19.4.10 Renal and urogenital
- 19.4.10.1 Bladder catheterization
  - 19.4.10.1.1 Urethral catheter
  - 19.4.10.1.2 Suprapubic catheter
- 19.4.10.2 Cystourethrogram
- 19.4.10.3 Testicular detorsion

19.4.11 Toxicologic
- 19.4.11.1 Decontamination
- 19.4.11.2 Antidote administration

19.5 Ultrasound

19.5.1 Ultrasound physics, artifacts, knobology, and safety (ALARA)

19.5.2 Diagnostic ultrasound
- 19.5.2.1 Aorta
  - 19.5.2.1.1 Abdominal aortic aneurysm

- 19.5.2.2 Biliary
  - 19.5.2.2.1 Cholelithiasis
  - 19.5.2.2.2 Cholecystitis
- 19.5.2.3 Bowel
  - 19.5.2.3.1 Peritoneal fluid assessment
  - 19.5.2.3.2 Small bowel obstruction
- 19.5.2.4 Cardiac
  - 19.5.2.4.1 Asystole
  - 19.5.2.4.2 Global left ventricular function
  - 19.5.2.4.3 Global right ventricular size
  - 19.5.2.4.4 Pericardial fluid
- 19.5.2.5 Ocular
  - 19.5.2.5.1 Undifferentiated vitreous chamber
- 19.5.2.6 Female pelvis (transabdominal and transvaginal approaches)
  - 19.5.2.6.1 Intrauterine pregnancy
  - 19.5.2.6.2 Fetal assessment
    - 19.5.2.6.2.1 Fetal heart rate
- 19.5.2.7 Renal and bladder
  - 19.5.2.7.1 Hydronephrosis
  - 19.5.2.7.2 Bladder volume assessment
- 19.5.2.8 Soft tissue/Musculoskeletal
  - 19.5.2.8.1 Abscess
  - 19.5.2.8.2 Cellulitis
  - 19.5.2.8.3 Necrotizing fasciitis
  - 19.5.2.8.4 Foreign body detection
  - 19.5.2.8.5 Joint effusion
- 19.5.2.9 Thoracic
  - 19.5.2.9.1 Pleural effusion
  - 19.5.2.9.2 Pneumothorax
  - 19.5.2.9.3 Alveolar interstitial syndrome
- 19.5.2.10 Venous/Arterial assessment
  - 19.5.2.10.1 Deep venous thrombosis
  - 19.5.2.10.2 Inferior vena cava

- 19.5.3 Resuscitative
  - 19.5.3.1 Cardiac arrest
  - 19.5.3.2 Medical
  - 19.5.3.3 Traumatic
    - 19.5.3.3.1 Pericardial fluid
    - 19.5.3.3.2 Peritoneal fluid
    - 19.5.3.3.3 Pleural fluid
    - 19.5.3.3.4 Pneumothorax
  - 19.5.3.4 Undifferentiated hypotension
- 19.5.4 Procedural applications
  - 19.5.4.1 Abscess incision and drainage
  - 19.5.4.2 Arthrocentesis
  - 19.5.4.3 Foreign body removal
  - 19.5.4.4 Paracentesis
  - 19.5.4.5 Pericardiocentesis
  - 19.5.4.6 Regional anesthesia
  - 19.5.4.7 Thoracentesis
  - 19.5.4.8 Vascular access

19.5.4.8.1 Central venous
19.5.4.8.2 Peripheral venous
19.5.4.8.3 Arterial

19.6 Other Diagnostic and Therapeutic Procedures

19.6.1 Foreign body removal
19.6.2 Collection and handling of forensic material

20.0 OTHER CORE COMPETENCIES OF THE PRACTICE OF EMERGENCY MEDICINE

20.1 Interpersonal and Communication Skills

- 20.1.1 Interpersonal skills
  - 20.1.1.1 Inter-departmental and medical staff relations
  - 20.1.1.2 Intra-departmental relations, teamwork, and collaboration skills
  - 20.1.1.3 Patient and family-centered care and patient/family engagement
  - 20.1.1.4 Empathetic and compassionate care management skills
- 20.1.2 Communication skills
  - 20.1.2.1 Complaint management and service recovery
  - 20.1.2.2 Conflict management and resolution
  - 20.1.2.3 Crisis resource management
  - 20.1.2.4 Delivering difficult information to patient and family
  - 20.1.2.5 Notification of family/loved ones of deceased patient
  - 20.1.2.6 Cultural humility
    - 20.1.2.6.1 Implicit bias
    - 20.1.2.6.2 Systemic racism
  - 20.1.2.7 Social determinants of health resource management
  - 20.1.2.8 Negotiation skills
  - 20.1.2.9 Partnering with patients and families to discuss, address, and manage their plan of care
  - 20.1.2.10 Shared decision-making
  - 20.1.2.11 Active listening and building trust
  - 20.1.2.12 Discharge planning, medication management, and patient/family education
  - 20.1.2.13 Handoffs, hospital admission, and patient/family education

20.2 Practice-based Learning and Improvement

- 20.2.1 Performance improvement and lifelong learning
  - 20.2.1.1 Evidence-based medicine
  - 20.2.1.2 Interpretation of medical literature
  - 20.2.1.3 Knowledge translation
  - 20.2.1.4 Patient safety and medical errors
  - 20.2.1.5 Performance evaluation and feedback
  - 20.2.1.6 Research
- 20.2.2 Practice guidelines
- 20.2.3 Education
  - 20.2.3.1 Patient and family
  - 20.2.3.2 Care teams
- 20.2.4 Principles of quality improvement

20.3 Professionalism

- 20.3.1 Advocacy
  - 20.3.1.1 Patient
  - 20.3.1.2 Professional
  - 20.3.1.3 Healthcare disparities
  - 20.3.1.4 Injury prevention
    - 20.3.1.4.1 Firearm injury
- 20.3.2 Ethical principles
  - 20.3.2.1 Conflicts of interest
  - 20.3.2.2 Diversity and inclusion awareness
  - 20.3.2.3 Management of medical misinformation and disinformation

- 20.3.2.4 Medical ethics
- 20.3.2.5 Stewardship of resources
- 20.3.2.6 Care of vulnerable populations
- 20.3.2.7 Gender and sexual orientation
  - 20.3.2.7.1 Transgender care
    - 20.3.2.7.1.1 Gender-affirming therapy and procedures
- 20.3.3 Leadership and management principles
- 20.3.4 Well-being and resilience
  - 20.3.4.1 Fatigue and impairment
    - 20.3.4.1.1 Sleep hygiene
  - 20.3.4.2 Time management/Organizational skills
  - 20.3.4.3 Work/Life balance
  - 20.3.4.4 Physician burnout
  - 20.3.4.5 Job and contract evaluation
  - 20.3.4.6 Care for the caregiver

20.4 Systems-based Practice

- 20.4.1 Clinical informatics
  - 20.4.1.1 Computerized order entry
  - 20.4.1.2 Clinical decision support
  - 20.4.1.3 Electronic health record
  - 20.4.1.4 Health information exchange and interoperability
  - 20.4.1.5 Telemedicine
- 20.4.2 ED administration
  - 20.4.2.1 Contracts and practice models
  - 20.4.2.2 Patient flow and throughput
    - 20.4.2.2.1 Patient triage and classification
    - 20.4.2.2.2 Hospital crowding and diversion
    - 20.4.2.2.3 Observation and rapid treatment units
  - 20.4.2.3 Financial principles
    - 20.4.2.3.1 Billing and coding
    - 20.4.2.3.2 Cost-effective care and resource utilization
    - 20.4.2.3.3 Reimbursement issues
  - 20.4.2.4 Human resource management
    - 20.4.2.4.1 Allied health professionals
    - 20.4.2.4.2 Recruitment, credentialing, and orientation
    - 20.4.2.4.3 Staffing/Scheduling
  - 20.4.2.5 Emergency preparedness
    - 20.4.2.5.1 Emergency operations plan
    - 20.4.2.5.2 Supplies/Materials procurement and stockpiling
      - 20.4.2.5.2.1 Personal protective equipment
    - 20.4.2.5.3 Hospital-based casualty/disaster protocols
      - 20.4.2.5.3.1 Incident command system
      - 20.4.2.5.3.2 Decontamination, triage, and treatment areas
    - 20.4.2.5.4 External disaster planning
- 20.4.3 ED operations
  - 20.4.3.1 Policies and procedures
  - 20.4.3.2 ED data acquisition and operational metrics
  - 20.4.3.3 Safety, security, and violence in the ED
  - 20.4.3.4 Patient satisfaction
  - 20.4.3.5 Clinical quality measurement

- 20.4.3.6 Physician-led care team
- 20.4.4 Health care coordination
  - 20.4.4.1 Advance directives
    - 20.4.4.1.1 Physician orders for life-sustaining treatment (POLST)
  - 20.4.4.2 Palliative care
    - 20.4.4.2.1 Patient identification for palliative care
    - 20.4.4.2.2 Withdrawal of support
    - 20.4.4.2.3 Hospice referral
  - 20.4.4.3 Placement options
    - 20.4.4.3.1 Activities of daily living/Functional assessment
  - 20.4.4.4 Outpatient services
  - 20.4.4.5 Organ donation
- 20.4.5 Regulatory/Legal
  - 20.4.5.1 Accreditation
  - 20.4.5.2 Compliance and reporting requirements
  - 20.4.5.3 Confidentiality, privacy, and HIPAA
  - 20.4.5.4 Consent, capacity, and refusal of care
  - 20.4.5.5 Emergency Medical Treatment and Active Labor Act (EMTALA)
  - 20.4.5.6 External quality metrics
  - 20.4.5.7 Good Samaritan emergency care
  - 20.4.5.8 Treatment of unaccompanied minors
- 20.4.6 Risk management
  - 20.4.6.1 Liability and litigation
  - 20.4.6.2 Professional liability insurance
  - 20.4.6.3 Risk mitigation
  - 20.4.6.4 Error disclosure
  - 20.4.6.5 Root cause analysis
- 20.4.7 Regionalization of emergency care
- 20.4.8 Evolving trends in health care delivery

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

911 Caller Good Samaritan Laws

Revised February 2020

Originally approved
June 2014

To encourage the public to call for help during a potential overdose or other medical condition, the American College of Emergency Physicians (ACEP) supports the widespread passage of laws eliminating legal liability for good faith reporting of emergencies through 911 and other official communication channels. ACEP also supports public participation, education, funding and coordination for successful implementation of such laws.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved 2021

A Culture of Safety in EMS Systems

Revised April 2021

Originally approved April 2014

The American College of Emergency Physicians (ACEP) and the National Association of EMS Physicians (NAEMSP) believe that safety must be a foundational component of every emergency medical services (EMS) system. Providing high-quality EMS requires understanding risk and embracing practices to prevent harm to patients, EMS professionals, and members of our communities. EMS physicians should lead development and support of a culture of safety in EMS systems.

We believe:

- EMS systems should partner with national organizations to increase safety in all aspects of EMS.
- EMS systems should support the development, implementation, and ongoing evaluation of comprehensive system-wide safety, quality, and risk management programs.
- EMS safety and comprehensive risk management should be emphasized in both initial and continuing education for all EMS professionals, including EMS physicians.
- EMS systems should implement and support the Just Culture approach to facilitate honest and prompt reporting of risk and error and to support analysis of near miss and adverse events in an environment of professionalism and accountability for systems and individuals.
- Integrated EMS safety data systems with mandatory reporting should be created to promote evaluation of safety programs and to promote research that advances understanding of safety for EMS professionals, systems, and patients.
- EMS physicians should advocate for EMS safety-related programs coordinated at the local, regional, state, and federal levels based on evidence-based practice and benchmarks.
- EMS physicians should evaluate technologies and equipment for improvements in safety for patients, EMS professionals, and the public.
- EMS physicians should support the development of and adherence to safety standards and guidelines based on the best available evidence.
- EMS physicians should integrate opportunities to limit risk and increase safety within protocols, policies, and standing orders.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Academic Departments of Emergency Medicine and Required Emergency Medicine Education in Medical Schools

Revised February 2023 with current title, June 2017

Reaffirmed April 2011, September 2005

Approved March 1999 titled "Academic Departments of Emergency Medicine in Medical Schools"

Originally approved November 1974 as Board Motion BM 005

ACEP believes each medical school should include an academic department of emergency medicine that will be responsible for educational programs in emergency medicine and will be equal in status to the other departments.

In addition, all United States medical schools should require formal exposure to the specialty of emergency medicine, including, but not limited to, an emergency medicine rotation, to ensure that graduating medical students understand the role of emergency departments and the practice of emergency medicine.

Medical schools without direct access to a clinical site for mandatory emergency medicine clerkships should strive to form agreements with and allocate appropriate resources to any affiliated academic emergency medicine department with a clinical site that is able to support this endeavor.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Access to 9-1-1 Public Safety Centers, Emergency Medical Dispatch, and Public Emergency Aid Training

Originally approved June 2018, replacing the following rescinded policy statement:

- Public Training in Cardiopulmonary Resuscitation and Public Access Defibrillation (1984-2018)

The American College of Emergency Physicians (ACEP) believes that patients with a medical emergency as defined using the prudent layperson standard must have universal access to 9-1-1 based emergency medical services (EMS) systems, and supports the following principles:

- 100% of the United States population should have Next Generation 911 (NG911) access to local public safety answering points (PSAPs). The definition of Next Generation 911 and multiple information resources about Next Generation 911 can be found at https://www.911.gov/issue_nextgeneration911.html.

- ACEP strongly supports education in cardiopulmonary resuscitation (CPR), to include use of an automated external defibrillator (AED), and hemorrhage control being compulsory prior to high school graduation. Scientific studies conclude that pre-high school students can successfully attain and retain this lifesaving education. ACEP strongly supports a structured program of education in CPR, AED use, and hemorrhage control throughout primary and secondary school curriculums. These same skills should be widely taught to the adult public at large.

- All EMS-related PSAPs should utilize an evidence-based system of pre-EMS arrival medical aid instructions, approved by the PSAP physician medical director(s), to include CPR, an AED and hemorrhage control as primary instruction for those without prior training, and as secondary supportive instruction for those utilizing their prior training.

- An AED should be registered with the applicable PSAP in order to develop a real-time map of AED locations, to promote AED use when suspected sudden cardiac arrest victims collapse in the vicinity of an AED. Local ordinances regarding AEDs should be developed that include requirements that AEDs be maintained with physician consultation, including within AED plans developed by the local PSAP and EMS physician medical director(s).

- All EMS-related PSAPs should incorporate an organized system of initial education, continuing education, and continuous quality improvement for an evidence-based system of pre-EMS arrival medical aid instructions, approved by the PSAP physician medical director(s).

- It is advantageous that the physician medical director(s) of the EMS system(s) dispatched by the PSAP also serves as the PSAP physician medical director(s). Shared medical oversight best promotes an effective, integrated emergency medical dispatch system into the local standards of EMS care for the ultimate goal of improving patient clinical outcomes.

- Appropriate and enduring funding should be provided to ensure continuous, efficient and effective PSAP operations. Mechanism to promote funding may include local, regional, state, and/or federal legislative measures.

- Research designed to improve public training in CPR, AEDs, and hemorrhage control and effective utilization of such training in times of patient need is encouraged.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Access to Critical Health Information for Children During Emergencies: Emergency Information Forms and Beyond

Revised June 2022 with current title, April 2010

Reaffirmed October 2008, October 2002

Originally approved December 1998 titled "Emergency Information Form for Children with Special Health Care Needs"

A joint policy statement of the American College of Emergency Physicians and the American Academy of Pediatrics

Available online at
https://www.annemergmed.com/article/S0196-0644(22)01329-4/fulltext

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Access to Optimal Emergency Care for Children

Originally approved
January 2021

A joint policy statement of the American Academy of Pediatrics (AAP), the American College of Emergency Physicians (ACEP), and the Emergency Nurses Association (ENA)

AMERICAN ACADEMY OF PEDIATRICS
Committee on Pediatric Emergency Medicine

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
Pediatric Emergency Medicine Committee

EMERGENCY NURSES ASSOCIATION
Pediatric Committee

POLICY STATEMENT
Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

Access to Optimal Emergency Care for Children

ABSTRACT. Every year, millions of pediatric patients seek emergency care. Significant barriers limit access to optimal emergency services for large numbers of children. The American Academy of Pediatrics, the American College of Emergency Physicians, and the Emergency Nurses Association have a strong commitment to identifying these barriers, working to overcome them, and encouraging, through education and system changes, improved access to emergency care for all children.

ABBREVIATIONS: AAP, ACEP, ED, emergency department; EMS, emergency medical services; EMSC, Emergency Medical Services for Children; ENA, Emergency Nurses Association; NPRP, National Pediatric Readiness Project.

INTRODUCTION

All children deserve access to optimal (safe and high-quality) emergency care. Given the inherent vulnerabilities of children and the potential lifelong

consequences of poorly treated health conditions, access to optimal emergency health care is particularly important. In the United States, emergency departments (EDs) serve as the national safety net for individuals unable to find care elsewhere as well as a resource during public health emergencies and disasters through the provision of comprehensive acute care 24 hours a day, 7 days a week. Vulnerable populations who rely more heavily on the ED for services are disproportionally affected when this safety net is weakened or fails, and this needs to be addressed to ensure optimal care for all Americans. A significant portion of annual ED visits are by children younger than 18 years. Recent national data show that children account for approximately 20% of all ED visits, which represents more than 27 million total ED visits in the United States.[1] The vast majority of these visits take place outside of pediatric medical centers and children's hospitals.[2]

The American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), and Emergency Nurses Association (ENA) have previously endorsed policy statements advocating for improved access to emergency care.[3-5] Despite these statements and calls for action by other groups,[6] access to optimal emergency care remains limited for many children in the United States. The 2014 ACEP "Report Card on Emergency Medicine" examined access to emergency care for patients of all ages on a state-by-state basis, and it found that very few states have adequate policies and resources to deliver an acceptable level of emergency care access. The overall nationwide grade of D– was unchanged since the last report card was issued in 2009, reflecting a lack of improvement in emergency care access despite recent efforts at health care reform.[7]

PROBLEMS THAT RESTRICT ACCESS TO CARE

Children and their families face barriers to optimal emergency care at many key points of access. These include:

1. **Public and Professional Awareness of Available Resources and Systems of Care**
   Deficits remain in the awareness and perceptions of the public and health care professionals regarding the emergency care system and how best to access emergency care when needed. These include:
   - Lack of a consensus on what should drive entry into the emergency care system and appropriate points of access for patients.
   - Underutilization of emergency medical services (EMS) in emergencies because of misconception by some caregivers that they can reach EDs faster on their own.
   - Limited access to a medical home for patients and poor coordination of 2-way communication between emergency physicians, nurse practitioners or physician assistants and the primary care provider.[8]
   - The misconception that urgent care centers provide comprehensive emergency services.
   - Lack of knowledge of the inconsistent readiness of EDs to care for children of all ages.[9]
   - Language and health literacy barriers to understanding appropriate utilization of less emergent sources of care such as urgent clinic appointments or urgent care centers.
   - Poor access to timely primary care appointments among vulnerable patients, especially children with public insurance, with language barriers, who are members of racial and ethnic minorities and/or who live in underserved areas.[10,11]

2. **Entry into the Emergency Care System**
   Many factors may limit a family's ability to access the emergency care system for their child. These include:
   - Lack of universal access to enhanced or basic 911 services and wireless 911 service for cellular phones, with continued reliance in some areas on local 10-digit emergency telephone numbers.[12]

- Language barriers that can impede utilization of 911 services in many locales.
- Limited transportation resources to access emergency care outside of the 911 system.
- Long transportation times, especially in rural environments.[13]
- Concern for financial consequences of activating the 911 system and incurring bills that may not be adequately covered by all insurance types.
- Concerns on the part of families of ill or injured children regarding immigration issues, social service agency intervention, and other legal or financial concerns that might arise once care has been accessed.
- Excessive demand on the emergency care system by inappropriate use of 911 systems by patients who do require them. This limits the availability of such services and can potentially delay a more urgent transport.

3. Availability of Optimal Pediatric Prehospital Care

The Institute of Medicine (now the National Academy of Medicine)[6] and others have outlined some of the deficiencies in pediatric prehospital care including:

- Variability in pediatric readiness between urban, suburban, and rural prehospital care systems as well as discrepancies in readiness between high volume pediatric facilities and their low volume (fewer than 10 pediatric patients a day) counterparts.
- Lack of comprehensive pediatric training, experience, competency assessment, and ongoing quality improvement for prehospital EMS and interfacility transport professionals.
- Limited scientific evidence on which to base protocols or procedures for prehospital care of children.
- Limited high-quality and specific evidence-based guidelines for care efficacy and safety within all levels of emergency medical services for children.
- Lack of validated quality metrics and paucity of quality improvement efforts in pediatric prehospital care.

4. Availability of Optimal Emergency Care for Children

- **Underserved areas/populations**
  - *Impact of closing hospital EDs.* The closure of EDs and hospitals that disproportionately serve disadvantaged populations has impacted both rural areas and underserved urban areas, with differential impacts in each type of region.[14]
  - *Critical access hospitals.* The federal government has historically supported rural hospitals. In 1997, the Centers for Medicare and Medicaid Services created the Critical Access Hospital Program, through which Congress, through the Balanced Budget Act of 1997, designated several small rural hospitals as critical access facilities, recognizing that their small size limited their scope of service.[15] Such hospitals received extra federal funding to focus on critical medical services. Often, these facilities have low volumes in general and in particular have low pediatric volumes, which limits experience in pediatric care and creates a challenge for skill retention. Moreover, changes in health care reimbursement models have led to struggles for rural hospitals, leading to many closures and decreased services in some instances. From 2010-2016, 75 rural hospitals in the United States closed or ceased operations, prompting new concerns about access to essential services in rural communities.[16,17]
  - *Development of expanded medical services*. Accelerated trends toward retail medical clinics, urgent care clinics, and freestanding EDs in addition to expansion of existing facilities disproportionately benefit areas with a higher socioeconomic status, which has the potential to create further disparities in access to care in underserved areas.[18]
- **ED Crowding.** Long ED wait times for pediatric patients can discourage families from seeking timely care for emergency situations. In addition, crowded EDs create a challenging and rushed

environment that is less child friendly and fails to address specific needs of each pediatric patient.[19] Long wait times and crowding in EDs is particularly difficult for children with special health care needs, including those with physical and intellectual disabilities or mental and behavioral health concerns. Crowding has been associated with decreased safety, timeliness, and effectiveness of emergency care in children.[20-25]

- **Readiness of EDs for Pediatric Patients.** Data from the 2013 National Pediatric Readiness Project (NPRP) noted that pediatric preparedness had improved since 2003, with the national median assessment score increasing from 55 to 69 out of 100 points.[9] Despite this improvement, many gaps in pediatric readiness remain, particularly in EDs with a low volume of pediatric patients. In the 2013 assessment, at least 15% of EDs lacked at least 1 specific piece of recommended equipment, 81% reported barriers to implementing guidelines for pediatric emergency care, only 47% included pediatric specific components to their disaster plans, and fewer than half included children in disaster drills.[9] Further study of 1 state (California) determined that the presence of a pediatric emergency care coordinator and the inclusion of pediatric-specific elements in the ED quality improvement plan were associated with improved scores on the NPRP. However, in the same state, only about half of the hospitals had a person designated as a pediatric emergency care coordinator, and fewer than half had a quality improvement plan that included at least 1 pediatric-specific metric.[26]
- **Quality of Care: Evidence-Based Practice and Quality Improvement.** Despite significant growth in high-quality pediatric emergency care research, a relative paucity of data to support evidence-based care for childhood emergencies remains. In addition, a significant delay between the creation of evidence and its translation into practice in the ED further challenges knowledge translation and dissemination.[27,28]
- **Access to Pediatric Medical Subspecialists, Pediatric Surgical Specialists, and Mental Health Professionals.** Significant geographic variation exists in access to pediatric subspecialty care, with children in rural areas disproportionately affected by poor access to subspecialists and longer transport times to centers that provide specialty care including care for behavioral and mental health emergencies, (28a, 28 b) . This lack of access limits the ability to provide emergency and ongoing care for children closer to their homes and places a larger burden on families requiring specialty care in addressing complications from ongoing disease processes and treatments.[29-31] Moreover, regardless of their insurance, patients may experience challenges with accessing specialty care and navigating networks of care.[32] Telemedicine has been proposed as a potential solution to this problem and has received significant attention due to COVID-19, with improvement in access, and a reduction in previously described implementation barriers.[33]

5. Financial Considerations

Limited and often inadequate payment for primary care for many children decreases both the availability of primary care and the ability to provide unscheduled visits in the primary care office setting. Children covered by Medicaid or the Children's Health Insurance Program (CHIP) visit the ED more frequently than both those with private insurance and those who are uninsured. However, reasons for the visit differed among population groups. When asked about their child's last visit to the ED, respondents for children who had Medicaid or CHIP were more likely than those with private coverage to report that their usual medical home was not open or that they did not have another place to obtain care. On the other hand, respondents for certain categories of privately insured children were more likely to report they last visited the ED because the family's primary care provider told them to go or they perceived that the condition was too serious to be treated by primary care .[34] A recent study demonstrated that office-based primary care pediatricians increased their Medicaid participation after the payment increases, in large part by increasing their Medicaid panel percentage.[35]

Other financial concerns include:

- Failure by payers to use the "prudent-layperson" standard for definition of emergency care, which creates financial hardships after a care episode and can discourage future timely emergency visits.
- Increased number of insurance plans with high deductibles may discourage families from seeking emergency care when needed. Increasing regulatory and managed care initiatives related to emergency access for children that often require complex and time-consuming telephone calls and documentation to ensure appropriate payment for care.
- Managed care protocols designed to reduce the use of emergency facilities provide variable levels of appropriate alternatives for care.
- Increasing numbers of "narrow networks" (in which, in exchange for paying lower insurance premiums, the plan restricts the number and type of physicians, nurse practitioners or physician assistants who services are covered), can limit access to EDs in children's hospitals and to subspecialty services, which delays access to timely care and can result in poor health outcomes.

IMPROVING ACCESS TO EMERGENCY CARE FOR CHILDREN

The emergency care environment remains challenging for pediatric patients, as outlined in this report, but efforts have been ongoing in recent years to improve access to optimal pediatric emergency care. Professional organizations such as the ACEP, the AAP, and the ENA, along with government agencies such as the Emergency Medical Services for Children (EMSC) program of the Health Resources and Services Administration, have worked to increase information available to lay people as well as medical professionals. Enhanced and next-generation 911 systems are steadily improving the ease and reliability of calls for help and enable prehospital professionals to respond appropriately and efficiently. An increased focus on prehospital care and pediatric readiness in the ED setting through EMSC programs, the NPRP, and state-based pediatric readiness recognition programs in hospitals have increased both awareness and ability to address pediatric emergencies at all stages of care.

Although inherent challenges remain, an increased focus on pediatric emergency research through networks such as the Pediatric Emergency Care Applied Research Network (PECARN) has helped to advance the evidence base, increase awareness, and promote efforts to address the need for more information.[36-38] In addition, pediatric emergency medical education continues to expand through increasing numbers of fellowships, residency training that includes dedicated pediatric emergency education, and ongoing targeted continuing medical education training. Pediatric nursing residency training programs and certification in pediatric emergency nursing contribute positively to patient satisfaction and nurse retention.[39]

Despite these recent efforts to improve access to emergency care, access to optimal emergency care for children can and should be improved. The ACEP, the AAP, and the ENA believe that every child in need should have access to quality pediatric emergency health care in the appropriate setting. Efforts must be made at local, state, and federal levels to improve prompt and appropriate access to pediatric emergency health care including dental, behavioral and mental health emergencies for all children regardless of socioeconomic status, ethnic origin, language, immigration status, type of insurance, geographic location, or health status.

RECOMMENDATIONS

I. Improving Entry into the Emergency Care System:

The ACEP, the AAP, and the ENA recommend that:

A. Pediatricians, emergency physicians, emergency nurses, health care systems and their professional organizations work with stakeholders within their communities to improve public and health care professional's awareness of available resources and systems of care by:

1. Improving transparency of pediatric systems of care within communities. Including educating families and caregivers about the urgent and emergency care resources in their community.

2. Developing and disseminating knowledge and resources to increase public, health professional, and government awareness about the magnitude of the problem of access to emergency medical care for children.
3. Improving awareness, use, and dissemination of comprehensive resources available through the EMSC program.
4. Encouraging collaborative efforts by emergency physicians, nurse practitioners and physician assistants and primary care providers to identify an appropriate medical home for every child.
5. Increasing access to a medical home by expansion of after-hours and/or improved coordination with after hours or urgent care clinics with the medical home for ambulatory sensitive conditions to improve timely and appropriate care. [8]
6. Encouraging the use of the emergency information form (EIF) published by the AAP and ACEP.[40] This form is particularly helpful for children with medical complexity.[41]
7. Developing electronic versions of the emergency information form with health information exchange for easy access.

B. Federal governmental agencies provide ongoing funding support for future resource development, education, research, and quality outcomes measurement by the EMSC program, as recommended in the 2006 Institute of Medicine report.

C. State and federal governmental agencies work with EMS systems and health care organizations to improve entry into the emergency care system by:
   1. Improving all 911 systems to facilitate communication with non–English speaking families.
   2. Continuing to broaden enhanced and next-generation 911 systems to more locations in the United States to allow wireless services via cellular phones, as well as voice-over-Internet protocols, text messaging, and video transfer.
   3. Improving collaboration and connectivity between schools, childcare facilities, mental health professionals, medical homes, and local EMS systems to facilitate easy access into the EMS system.

II. Improving Pediatric Prehospital Care

The ACEP, the AAP, and the ENA recommend that:

A. State and federal governmental agencies work with EMS systems to ensure optimal prehospital care for children by:
   1. Funding, supporting, and promoting the further development and improvement of EMS for children at federal, state, and local levels.
   2. Insuring the inclusion of children's needs in all funded efforts to improve prehospital care (eg, EMS education, EMS COMPASS (quality metrics), EMS EBG consortium, EMS research).
   3. Encouraging state EMS systems, local EMS agencies, and hospitals to incorporate children in disaster planning and response.[42]

B. EMS physicians and agency leaders work with pediatricians, emergency physicians, emergency nurses, their professional organizations and other stakeholders within their communities to ensure availability of optimal prehospital care for children by promoting improved readiness for [pediatric patients as outlined in the joint policy statement "Pediatric Readiness in Emergency Medical Services Systems." [43]

III. Improving Emergency Department Care for Children and Adolescents

The ACEP, the AAP, and the ENA recommend that:

A. Pediatricians, emergency physicians, emergency nurses, health care systems and professional organizations work with stakeholders within their communities to ensure availability of optimal

emergency care for children by:

1. Promoting improved readiness and a minimal standard for readiness in all EDs as outlined in the joint policy statement "Pediatric Readiness in the Emergency Department."[44]
2. Developing quality metrics and quality improvement efforts for ED care of pediatric patients.
3. Encouraging the availability of and access to existing pediatric medical subspecialists, pediatric surgical specialists, and mental health professionals who have special skills and expertise that are required for optimal care of critically ill and injured children.
4. Encouraging the expansion of training programs to ensure future availability of adequate numbers of pediatric surgical and medical subspecialists necessary to provide specialized pediatric emergency care.
5. Supporting the development of nurse practitioners and physician assistants with particular training and expertise in pediatric emergency care with the goal to expand access to emergency care with appropriate levels of supervision based on jurisdictional regulations.
6. Promoting the development, dissemination, and implementation of evidence-based guidelines and other strategies, to improve diagnostic accuracy, therapeutic effectiveness, and minimization of unwanted variation in care.
7. Continuing to explore new and innovative methods of pediatric medical subspecialist care, such as telemedicine, to aid medical professionals in settings of limited resources.
8. Promoting the development of guidelines and education to the approach of children with behavioral and emotional difficulties (intellectual disabilities, autism spectrum disorder, and mental health disorders) for both prehospital and emergency care.[48]

B. State and federal governmental agencies, health care systems and professional organizations work with stakeholders within their communities to ensure availability of optimal emergency care for children by:
   1. Promoting maintenance of ED facilities and work to prevent closing of hospitals that provide critical services in underserved communities.
   2. Encouraging all EDs and facilities that provide urgent care for children to establish transfer agreements and protocols with facilities with higher levels of pediatric care resources to promote timely access to specialty pediatric emergency care and subspecialty tertiary care for critically ill and injured children.[47]
   3. Developing state or regional programs to recognize facilities that have demonstrated pediatric readiness.[45,46]
   4. Developing funding sources, multidisciplinary support, and enhanced research efforts directed at all aspects of pediatric emergency care, including health equity, to provide the evidence for standards for effective and safe patient care.
   5. Promoting the inclusion of pediatric expertise into comprehensive psychiatric emergency programs (CPEPs) when these are available in a community

C. State and federal governmental agencies, health care systems and professional organizations work with payors to overcome financial barriers to the provision of optimal emergency care for children, by:
   1. Encouraging managed care organizations to accept the prudent-layperson definition of an emergency and to provide payment for services mandated by the Emergency Medical Treatment and Active Labor Act (42 USC §1395dd).
   2. Improving payment for pediatric care, using a value-based model that encourages the achievement of a pediatric-relevant cost to benefit ratio, especially valuing efforts that lead to prevention or better control of long standing problems recognizing that the most effective intervention may not be the one with the lowest cost but still represent the optimal choice.

3. Providing appropriate payment levels at all episodes of care to facilitate unscheduled primary care visits and reduce the burden on the emergency care system.
4. Providing payment for telemedicine to optimize the delivery of care for services that can be delivered via telemedicine.
5. Expanding coverage for the expanse of language-translation services required to provide emergency care
6. Expanding networks of care to allow patient access to specialty care and children's hospitals when indicated for patients. Reduce barriers to care for patients within networks of care.
7. Improving transparency of coverage for emergency care and eliminate the retrospective denial of payments for any reasons, including for chronic conditions or out-of-network emergency care.

FUNDING: No external funding.

CONTRIBUTORS' STATEMENT:

FINANCIAL DISCLOSURE: The authors have indicated they do not have a financial relationship relevant to this article to disclose.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

LEAD AUTHORS
Kathleen M. Brown, MD, FAAP, FACEP
Alice D. Ackerman, MD, MBA, FAAP
Timothy K. Ruttan, MD, FAAP
Sally K. Snow, RN, BSN, CPEN, FAEN

AMERICAN ACADEMY OF PEDIATRICS, COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 2020-2021
Gregory P. Conners, MD, MPH, MBA, FAAP, Chairperson
James Callahan, MD, FAAP

Toni Gross, MD, MPH, FAAP
Madeline Joseph, MD, FAAP
Lois Lee, MD, MPH, FAAP

Elizabeth Mack, MD, MS, FAAP
Jennifer Marin, MD, MSc, FAAP
Suzan Mazor, MD, FAAP
Ronald Paul, MD, FAAP
Nathan Timm, MD, FAAP

LIAISONS
Mark Cicero, MD, FAAP – National Association of EMS Physicians
Ann Dietrich, MD, FACEP – American College of Emergency Physicians
Andrew Eisenberg, MD, MHA – American Academy of Family Physicians
Mary Fallat, MD, FAAP – American College of Surgeons
Cynthia Wright Johnson, MSN, RN – National Association of State EMS Officials
Sara Kinsman, MD, PhD, FAAP – Maternal and Child Health Bureau
Cynthiana Lightfoot, BFA, NRP – AAP Family Partnerships Network
Charles Macias, MD, MPH, FAAP – EMSC Innovation and Improvement Center
Diane Pilkey, RN, MPH – Maternal and Child Health Bureau
Katherine Remick, MD, FAAP – National Association of Emergency Medical Technicians
Sam Shahid, MBBS, MPH – American College of Emergency Physicians
Elizabeth Stone, RN, PhD, CPEN – Emergency Nurses Association

FORMER COMMITTEE MEMBERS, 2018-2020
Joseph Wright, MD, MPH, FAAP, Chairperson (2016-2020)
Javier Gonzalez del Rey, MD, MEd, FAAP

FORMER LIAISONS, 2018-2020
Brian Moore, MD, FAAP – National Association of EMS Physicians
Mohsen Saidinejad, MD, MBA, FAAP, FACEP – American College of Emergency Physicians
Sally Snow, RN, BSN, CPEN, FAEN – Emergency Nurses Association

STAFF
Sue Tellez

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
PEDIATRIC EMERGENCY MEDICINE COMMITTEE, 2020-2021
Ann M Dietrich, MD, Chairperson
Kiyetta H Alade, MD
Christopher S Amato, MD
Zaza Atanelov, MD
Marc Auerbach, MD
Isabel A Barata, MD, FACEP
Lee S Benjamin, MD, FACEP
Kathleen T Berg, MD
Kathleen Brown, MD, FACEP
Cindy Chang, MD
Jessica Chow, MD
Corrie E Chumpitazi, MD, MS, FACEP

Ilene A Claudius, MD, FACEP
Joshua Easter, MD
Ashley Foster, MD
Sean M Fox, MD, FACEP
Marianne Gausche-Hill, MD, FACEP
Michael J Gerardi, MD, FACEP
Jeffrey M. Goodloe, MD, FACEP (Board Liaison)
Melanie Heniff, MD, JD, FAAP, FACEP
James (Jim) L Homme, MD, FACEP
Paul T Ishimine, MD, FACEP
Susan D John, MD
Madeline M Joseph, MD, FACEP
Samuel Hiu-Fung Lam, MD, MPH, RDMS, FACEP
Simone L Lawson, MD
Moon O Lee MD, FACEP
Joyce Li, MD
Sophia D Lin, MD
Dyllon Ivy Martini, MD
Larry Bruce Mellick, MD, FACEP
Donna Mendez, MD
Emory M Petrack, MD, FACEP
Lauren Rice, MD
Emily A Rose, MD, FACEP
Timothy Ruttan, MD, FACEP
Mohsen Saidinejad, MD, MBA, FACEP
Genevieve Santillanes, MD, FACEP
Joelle N Simpson, MD, MPH, FACEP
Shyam M Sivasankar, MD
Daniel Slubowski, MD
Annalise Sorrentino, MD, FACEP
Michael J Stoner, MD, FACEP
Carmen D Sulton, MD, FACEP
Jonathan H Valente, MD, FACEP
Samreen Vora, MD, FACEP
Jessica J Wall, MD
Dina Wallin, MD, FACEP
Theresa A Walls, MD, MPH
Muhammad Waseem, MD, MS,
Dale P Woolridge, MD, PhD, FACEP

STAFF
Sam Shahid, MBBS, MPH

CONSULTANT
Marianne Gausche-Hill, MD, FACEP, FAAP, FAEMS

EMERGENCY NURSES ASSOCIATION, PEDIATRIC COMMITTEE, 2018-2019
2018 PEDIATRIC COMMITTEE MEMBERS
Cam Brandt, MS, RN, CEN, CPEN, *Chairperson*
Krisi M. Kult, BSN, RN, CPEN, CPN

Justin J. Milici, MSN, RN, CEN, CPEN, CCRN, TCRN FAEN
Nicholas A. Nelson, MS, RN, CEN, CPEN, CTRN, CCRN, NRP, TCRN
Michele A. Redlo, MSN, MPA, RN, CPEN
Maureen R. Curtis Cooper, BSN, RN, CEN, CPEN, FAEN, *Board Liaison*

2019 PEDIATRIC COMMITTEE MEMBERS

Michele Redlo, MSN, MPA, BSN, RN, CPEN, *Chairperson*
Krisi Kult, BSN, RN, CPEN, CPN
Katherine Logee, MSN, RN, NP, CEN, CPEN, CFRN, CNE, FNP-BC, PNP-BC
Dixie Elizabeth Bryant, MSN, RN, CEN, CPEN, NE-BC
Maureen Curtis Cooper, BSN, RN, CEN, CPEN, FAEN
Kristen Cline, BSN, RN, CEN, CPEN, CFRN, CTRN, TCRN, *Board Liaison*

STAFF

Catherine Olson, MSN, RN

REFERENCES

1. Wier LM, Hao Y, Owens P, Washington R. Overview of Children in the Emergency Department, 2010. Healthcare Cost and Utilization Project Statistical Brief #157. Rockville, MD: Agency for Healthcare Research and Quality, Rockville, MD; June 2013. Available at: http://www.hcup-us.ahrq.gov/reports/statbriefs/sb157.pdf. Accessed September 18, 2019
2. Gausche-Hill M, et al. A National Assessment of Pediatric Readiness of Emergency Departments. *JAMA Pediatr*. 2015;169(6):527-534. doi:10.1001/jamapediatrics.2015.138
3. Policy Statement: Access to Optimal Emergency Care for Children. *Pediatrics*. 2007;119(1):161–164. Reaffirmed July 2014 Policy Statement: Access to Optimal Emergency Care for Children. *Pediatrics*. 2007;119(1):161–164. Reaffirmed July 2014
4. American College of Emergency Physicians. Access to Emergency Medicine. Available at: https://www.acep.org/federal-advocacy/access-to-emergency-medicine/. Accessed September 18, 2019
5. Emergency Nurses Association. Position statement: Access to quality healthcare. Available at: https://www.ena.org/docs/default-source/resource-library/practice-resources/position-statements/accessqualityhealthcare.pdf?sfvrsn=c26b8f33_14. Accessed September 18, 2019
6. Institute of Medicine, Committee on the Future of Emergency Care Emergency Care in the United States Health System. *Emergency Care for Children: Growing Pains*. Washington, DC: National Academies Press; 2007. Available at: https://www.nap.edu/catalog/11655/emergency-care-for-children-growing-pains. Accessed September 18, 2019
7. American College of Emergency Physicians, Report Card Task Force. America's emergency care environment, a state-by-state Report Card: 2014 edition. *Ann Emerg Med*. 2014;63(2):97-242
8. American College of Emergency Physicians. The patient-centered medical home model. Available at: https://www.acep.org/patient-care/policy-statements/the-patient-centered-medical-home-model/. Accessed September 18, 2019
9. Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr*. 2015;169(6):527-534
10. Shipman SA, Lan J, Chang C, Goodman DC. Geographic maldistribution of primary care for children. *Pediatrics*. 2011;127(1):19-27
11. Cheung PT, Wiler JL, Lowe RA, Ginde AA. National study of barriers to timely primary care and emergency department utilization among Medicaid beneficiaries. *Ann Emerg Med*. 2012;60(1):4–10e2
12. FCC FACT SHEET. Inquiry Concerning 911 Access, Routing, and Location in Enterprise Communications Systems. Notice of Inquiry - PS Docket No. 17-239. September 7, 2017. Available at: https://docs.fcc.gov/public/attachments/DOC-346580A1.pdf. *Accessed September 18, 2019*

13. Ray KN, Olson LM, Edgerton EA, et al. Access to high pediatric-readiness emergency care in the United States. *J Pediatr.* 2018;194:225–32:e1
14. Buchmueller TC, Jacobson M, Wold C. How far to the hospital? The effect of closures on access to care. *J Health Econ*. 2006;25(4):740-761
15. Centers for Medicare and Medicaid Services, Medicare Learning Network. Critical Access Hospital. Available at: https://www.cms.gov/outreach-and-education/medicare-learning-network-mln/mlnproducts/downloads/critaccesshospfctsht.pdf. Accessed September 18, 2019
16. The Cecil G. Sheps Center for Health Services Research. 155 Rural Hospital Closures: January 2005 – Present. 113 Closures Since 2010. Available at: http://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/. Accessed September 18, 2019
17. The Cecil G. Sheps Center for Health Services Research. 112 Rural Hospital Closures: January 2010 – Present. Available at: http://www.hrsa.gov/advisorycommittees/rural/publications/alternatemodel.pdf. Accessed September 18, 2019
18. Schuur JD, Baker O, Freshman J, Wilson M, Cutler DM. Where do freestanding emergency departments choose to locate? A national inventory and geographic analysis in three states. *Ann Emerg Med*. 2017;69(4):383-392.e5. Published online July 12, 2016
19. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Policy statement: Overcrowding crisis in our nation's emergency departments: is our safety net unraveling? *Pediatrics*. 2004;114(3):878–888. Reaffirmed July 2016
20. Barata I, Brown KM, Fitzmaurice L, Griffin ES, Snow SK; American Academy of Pediatrics, Committee on Pediatric Emergency Medicine; American College of Emergency Physicians, Pediatric Emergency Medicine Committee; Emergency Nurses Association, Pediatric Committee. Technical report: Best practices for improving flow and care of pediatric patients in the emergency department. *Pediatrics*. 2015;135(1):e273-e283
21. Depinet HE, Iyer SB, Hornung R, Timm NL, Byczkowski TL. The effect of emergency department crowding on reassessment of children with critically abnormal vital signs. *Acad Emerg Med*. 2014;21(10):1116-1120
22. Light JK, Hoelle RM, Herndon JB, Hou W, Elie MC, Jackman K, Tyndall JA, Carden DL. Emergency department crowding and time to antibiotic administration in febrile infants. *West J Emerg Med*. 2013;14(5):518-524
23. Bekmezian A, Fee C, Bekmezian S, Maselli JH, Weber E. Emergency department crowding and younger age are associated with delayed corticosteroid administration to children with acute asthma. *Pediatr Emerg Care*. 2013;29(10):1075-1081
24. Sills MR, Fairclough D, Ranade D, Kahn MG. Emergency department crowding is associated with decreased quality of care for children with acute asthma. *Ann Emerg Med.* 2011;57(3):191-200
25. Timm NL, Ho ML, Luria JW. Pediatric emergency department overcrowding and impact on patient flow outcomes. *Acad Emerg Med.* 2008;15(9):832-837
26. Remick K, Kaji AH, Olson L, et al. Pediatric readiness and facility verification. *Ann Emerg Med.* 2016;67(3):320-328
27. Auerbach M, Whitfill T, Gawel M, et al. Differences in the quality of pediatric resuscitative care across a spectrum of emergency departments. *JAMA Pediatr*. 2016;170(10):987-994
28. Kessler DO, Walsh B, Whitfill T, et al; INSPIRE ImPACTS Investigators. disparities in adherence to pediatric sepsis guidelines across a spectrum of emergency departments: a multicenter, cross-sectional observational in situ simulation study. *J Emerg Med*. 2016;50(3):403-415.e1-3
29. Pediatric and Adolescent Mental Health Emergencies in the EMS System (Technical Report [pediatrics.aappublications.org] *Pediatrics*. Vol. 127 No *(reaffirmed July 2014; September 2020)*
30. Pediatric Mental Health Emergencies in the Emergency (Policy Statement) [pediatrics.aappublications.org] *Pediatrics*. Vol. 118 No. 4 October 2006, pp. 1764-1767 *(reaffirmed June 2009 and April 2013; September 2020)*

31. Mayer ML. Disparities in geographic access to pediatric subspecialty care. *Matern Child Health J*. 2008;12(5):624-632
32. Mayer ML, Beil HA, von Allmen D. Distance to care and relative supply among pediatric surgical subspecialties. *J Pediatr Surg*. 2009;44(3):483-495
33. Lu H, Holt JB, Cheng YJ, Zhang X, Onufrak S, Croft JB. Population-based geographic access to endocrinologists in the United States, 2012. *BMC Health Serv Res*. 2015;15:541
34. Kreider AR, French B, Aysola J, Saloner B, Noonan KG, Rubin DM. Quality of health insurance coverage and access to care for children in low-income families. *JAMA Pediatr*. 2016;170(1):43-51
35. Ray KN, Felmet KA, Hamilton MF, et al. Clinician attitudes toward adoption of pediatric emergency telemedicine in rural hospitals. *Pediatr Emerg Care*. 2017;33(4):250–257
36. Medicaid and CHIP Payment and Access Commission. Access and Quality. Available at: https://www.macpac.gov/topics/access-and-quality/. Accessed September 18, 2019
37. Tang SS, Hudak ML, Cooley DM, Shenkin BN, Racine AD. Increased Medicaid payment and participation by office-based primary care pediatricians. *Pediatrics*. 2018;141(1):e20172570
38. The Pediatric Emergency Care Applied Research Network. The Pediatric Emergency Care Applied Research Network (PECARN): rationale, development, and first steps. *Acad Emerg Med*. 2003;10(6):661-668
39. Corneli HM, Zorc JJ, Mahajan P, et al; Bronchiolitis Study Group of the Pediatric Emergency Care Applied Research Network. A multicenter, randomized, controlled trial of dexamethasone for bronchiolitis. *New Engl J Med*. 2007;357(4):331-339
40. Kuppermann N, Holmes JF, Dayan PS, et al. Identification of children at very low risk of clinically-important brain injuries after head trauma. *Lancet*. 2009;374(9696):1160-1170
41. Straka KL, Ambrose HL, Burkett M, et al. The impact and perception of nursing certification in pediatric nursing. *J Pediatr Nurs*. 2014;29(3):205-211
42. American College of Emergency Physicians. Emergency information form for children with special health care needs. Available at: https://www.acep.org/by-medical-focus/pediatrics/medical-forms/emergency-information-form-for-children-with-special-health-care-needs/. Accessed September 18, 2019
43. Abraham G, Fehr J, Ahmad F, et al. Emergency information forms for children with medical complexity: a simulation study. *Pediatrics*. 2016;138(2):e20160847
44. American Academy of Pediatrics, Disaster Preparedness Advisory Council, Committee on Pediatric Emergency Medicine. Ensuring the care of children in disasters. *Pediatrics*. 2015;136(5):e1407-e1417
45. Moore B, Shah MI, Owusu-Ansah S, et al. Pediatric readiness in emergency medical services systems. *Ann Emerg Med* 2020;75:e1-e6.
46. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, Section on Surgery; American College of Emergency Physicians, Pediatric Emergency Medicine Committee; Emergency Nurses Association, Pediatric Committee. Policy statement: Pediatric readiness in the emergency department. *Pediatrics*. 2018;142(5):e20182459
47. Sachetti A. Is it still an emergency department if it can't treat children? *Ann Emerg Med*. 2016;67(3):329-331
48. Emergency Medical Services for Children, Innovation & Improvement Center. Facility Categorization Toolkit. Available at: https://emscimprovement.center/resources/toolboxes/facility-categorization-toolbox/. Accessed September 18, 2019
49. *Saidinejad M, Paul A, Gausche-Hill M, et al. Consensus statement on urgent care centers and retail clinics in acute care of children. Pediatr Emerg Care. 2019;35(2):138-142*
50. McGonigle JJ, Migyanka JM, Glor-Scheib SJ, et al. Development and evaluation of educational materials for pre-hospital and emergency department personnel on the care of patients with autism spectrum disorder. *J Autism Dev Disord*. 2014;44(5):1252-1259

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Access to Reproductive Health Care in the Emergency Department

Originally approved June 2023

The American College of Emergency Physicians (ACEP) supports equitable, nationwide access to reproductive health care, procedures, medications, and other interventions for all patients.

ACEP supports the position that the early termination of pregnancy (publicly referred to as "abortion") is a medical procedure, and as such, involves shared decision-making between patients and their physician regarding 1) discussion of reproductive health care, 2) performance of indicated clinical assessments, 3) evaluation of the viability of pregnancy and safety of the pregnant person, 4) availability of appropriate resources to perform indicated procedure(s), and 5) is to be made only by healthcare professionals with their patients.

ACEP specifically opposes the penalization of and or retaliation against patients, patient advocates, physicians, healthcare workers, and health systems for receiving, assisting, or referring patients within a state or across state lines to receive reproductive health services and medications for contraception, abortion, and pregnancy complications, and will further advocate for legal protection of said individuals.

ACEP opposes the statutory provision of criminal penalties for any medically appropriate care provided in the emergency department. ACEP also opposes mandatory reporting with the intent (explicit or implicit) to prosecute patients or their healthcare providers, which includes, but is not limited to, care for any pregnancy, pregnancy-related complications, or pregnancy loss.

ACEP affirms that: 1) abortion is a medical procedure that should be performed only by a duly licensed physician, surgeon, or other medical professional in conformance with standards of good medical practice and the Medical Practice Act of that individual's state; and 2) no physician or other professional personnel shall be required to perform an act violative of good medical judgment and this protection shall not be construed to remove the ethical obligation for referral for any medically indicated procedure.

ACEP encourages hospitals and emergency medicine residency training programs to provide education, training, and resources outlining evidence-based clinical practices on acute presentations of pregnancy-related

complications including miscarriage, post-abortion care, and self-managed abortions.

ACEP advocates for universal access to emergency contraception in the emergency department.

ACEP continues to develop clinical practices and policies that protect the integrity of the physician-patient relationship, the legality of clinical decision-making, and possible referral to additional medical care services, even across state lines, for pregnancy-related concerns including abortions.

ACEP supports clear legal protections for emergency physicians providing federally-mandated emergency care, particularly in cases of conflict between state and federal laws which include EMTALA and HIPAA.

ACEP supports an individual's ability to access the full spectrum of evidence-based pre-pregnancy, prenatal, peripartum, and postpartum physical and mental health care, and supports the adequate payment from all payers for said care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

ACEP Business Arrangements

Reaffirmed April 2020, April 2014, October 2008, October 2002

Revised June 1998 with current title

Originally approved January 1994 titled "Business Arrangements Between ACEP and Its Members"

- ACEP may enter into business arrangements determined to be beneficial to the College. College policies and sound business practices, including a clear delineation of the expected benefits and risks, determine whether such arrangements are prudent and proper.
- ACEP may endorse business ventures based on the merit of each individual proposal and consistent with the College's value statements.
- Except for customary ACEP educational agreements, the College does not enter into business arrangements with staff or College officers (as defined in the ACEP Bylaws), directors, committee chairs, or section chairs.
- All business arrangements involving ACEP and other College members or staff not excluded above are considered for approval by the Executive Committee of the Board of Directors subject to ratification by the Board of Directors.
- ACEP staff, in conjunction with the Finance Committee and the Board of Directors, manages College business not otherwise covered in this policy.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

ACEP Recognized Certifying Bodies in Emergency Medicine

Revised April 2023,
February 2020,
June 2014

Reaffirmed April 2014,
October 2008, and
October 2002

Originally approved
March 1998

The American College of Emergency Physicians (ACEP) recognizes and supports the American Board of Emergency Medicine (ABEM) as the sole American Board of Medical Specialties (ABMS) certifying body for emergency medicine. ACEP also acknowledges and values its special relationship with ABEM, which includes ACEP's role as an original sponsor and founder and continuing sponsor of ABEM, and the opportunity to submit nominations for appointment to the Board of Directors of ABEM.

ACEP recognizes the American Osteopathic Board of Emergency Medicine (AOBEM) as the sole certifying body in emergency medicine, under the jurisdiction of the American Osteopathic Association (AOA).

ACEP recognizes the American Board of Pediatrics (ABP) as the sole ABMS certifying body that provides certification in the subspecialty of pediatric emergency medicine.

No organizations beyond those already listed in the policy statement are recognized by ACEP as a certifying body for emergency medicine.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Addressing Nicotine Use

Revised April 2022 with current title, October 2016 titled "Tobacco and Nicotine Products – Public Policy Measures," January 2010 titled "Tobacco Products – Public Policy Measures"

Reaffirmed February 2003, October 1998

Originated as Council Resolution CR037 titled "Smoking – Public Policy Measures"

The American College of Emergency Physicians (ACEP) supports:

- Food and Drug Administration regulation of nicotine-containing products and nicotine delivery systems;
- adequate state and federal funding of nicotine control initiatives;
- regulation of nicotine product sale and advertising- especially products and advertisements containing flavoring agents or targeted at minors;
- continued enhancement of graphic warnings and package inserts on all such products originating from or sold in the United States to include factual statements regarding the known harms of nicotine use;
- public education on the health risks of nicotine use, second-hand smoke and vapor exposure;
- referral of nicotine-dependent individuals to affordable resources to assist them in reducing or eliminating nicotine use;
- public and private employer-based incentives and cessation programs for tobacco cessation;
- legislation to decrease nicotine exposure to children and adolescents;
- the prohibition of smoking and vapor producing nicotine delivery systems in public settings;
- increased taxes on nicotine related products, with the revenue generated used to fund prevention/cessation research and provide evidence-based interventions;
- the aggressive referral of nicotine users to effective cessation methods and services; and
- the cessation of all nicotine use as the ultimate goal of cessation programs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Adult Psychiatric Emergencies

Originally approved October 2020

The American College of Emergency Physicians (ACEP) supports a comprehensive approach to psychiatric emergencies. Psychiatric emergencies can include suicidal and homicidal behavior, psychosis, agitation, anxiety, substance use disorders, depression, mania, and a host of related and overlapping medical problems, such as delirium and dementia. All patients deserve access to emergency care for psychiatric crises. Emergency departments (EDs) are a critical component of a comprehensive safety net for psychiatric emergencies, and emergency physicians have an obligation to advocate for high-quality psychiatric emergency care.

In support of these principles, ACEP believes:

- Open access to high quality care for psychiatric emergencies is an essential component of a comprehensive medical safety net.

- Local communities, state and federal governments, private insurers, hospitals, and healthcare systems should be held accountable to invest adequate resources to assure psychiatric services meet the acute needs of patients in crisis.

- Hospitals and community psychiatric facilities should provide emergency psychiatric care comparable to the care provided for other medical emergencies.

- All EDs should be prepared to accept and stabilize the full range of psychiatric emergencies by providing evidence-based training for physicians and nurses, harm-mitigated facility space, adequate supplies and equipment, and coordination with those providing specialty and continuity of care, including psychiatry, social services, and community psychiatric facilities.

- Screening of patients presenting to the ED to detect acute and life-threatening signs and symptoms of suicide is supported by evidence and should be accompanied by treatment for high-risk individuals. All routine screening should be evidence-based, properly resourced, and not detract from the primary mission of the ED.

- Routine medical screening or "clearance" of all patients with psychiatric emergencies in EDs before they can be seen at community psychiatric facilities is not supported by the evidence. Focused screening may be appropriate in selected cases, and the approach should be coordinated across the community. Any medical testing should be guided by the history and physical examination.

- Boarding of patients with psychiatric emergencies in the ED is unacceptable, does not provide for a therapeutic alliance, and is a rapidly growing symptom of a systemic problem. Physicians, hospitals, community agencies, patient advocacy groups, and local, state and federal governments must work together to find timely solutions to this pressing problem.

- Medically appropriate and humane interventions are necessary to treat acutely agitated patients who are a threat to themselves, staff, the public, or who threaten to disrupt the care of other patients in the ED. All EDs should be adequately prepared for this care.

- The initiation of medically appropriate acute psychiatric and behavioral therapies in the ED is important to ensure timely care and should be coordinated with physicians and psychiatric clinicians to preserve continuity of care.

- Emergent psychiatric care should be age and gender-appropriate and tailored to the specific psychosocial conditions of each patient.

- As an integral component of disaster planning, hospitals and EDs should prepare for the emergent psychiatric consequences that disasters and public health crises can bring.

- Emergency physicians, medical associations, and other stakeholders should collaborate to create national consensus guidelines for the care of psychiatric emergencies.

- Research in psychiatric emergencies should be supported at all organizational levels, and emergency departments should be considered as potential sites for the conduct of appropriate studies.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Advanced Practice Provider Point-of-Care Ultrasound Guidelines

Originally approved June 2019

Given both the substantial contribution of Advanced Practice Providers (APPs) in the provision of emergency care, and the 2016 Model of the Clinical Practice of Emergency Medicine recognizing emergency ultrasound (EUS)* as a skill integral to emergency medicine, it is important to consider the value of APP-performed EUS, and how EUS can be safely, efficiently, and effectively employed by all clinicians providing care in the emergency setting.[1-4]

APPs seeking to integrate EUS into their practice should follow the same education and competency standards outlined in ACEP's *Ultrasound Guidelines: Emergency, Point-of-care, and Clinical Ultrasound Guidelines in Medicine*.[5] APPs who have demonstrated adherence to these guidelines may be considered eligible for credentialing in EUS according to institutional and regional practices. EUS program leadership is encouraged to incorporate APPs into EUS training programs when feasible and support the credentialing of APPs in EUS when competency standards have been met. Departmental leadership may consider both static and dynamic factors such as resource allocation, local culture, provider training and levels of experience with EUS to make decisions as to the final APP EUS program architecture.[6,7]

In accordance with ACEP's *Guidelines Regarding the Role of Physician Assistants and Advanced Practice Registered Nurses in the Emergency Department,* EUS directors are encouraged to develop local training and practice standards for APP ultrasound, defining the institutional scope of practice for APP EUS.[6] In addition, physician oversight includes supervisory agreements and roles as defined by the above *Guidelines.*

For APPs practicing in rural and austere environments, EUS training still needs to adhere to the recommendations in ACEP's *Guidelines*. However, the use of online modalities, tele-ultrasound, and cloud-based applications which offer the opportunity for remote image review and quality assurance, can be used for physician oversight in this setting. There is an expectation of physician supervision of EUS, and emergency physicians providing oversight in this setting should be trained and credentialed in EUS. Given the significant benefits of EUS for patient care, APPs trained in EUS should not be discouraged from integrating those skills into their practice.

Appropriately trained APPs who demonstrate proficiency in administrative tasks associated with EUS program operations should be considered capable to assume administrative positions within EUS programs as deemed appropriate by EUS physician directors. Examples include, but are not limited to, experiences as sonographers prior to becoming APPs, APP completion of EUS fellowships and completion of EUS management courses.

Within these parameters, the American College of Emergency Physicians supports the training, practice and integration of APP EUS into current EUS programs.

* EUS is synonymous with emergency medicine point-of-care ultrasound (EM POCUS) in this document

References

1. Hall MK, Burns K, Carius M, et al. State of the National Emergency Department Workforce: Who Provides Care Where? *Ann Emerg Med*. 2018;72(3):302-7. doi:10.1016/j.annemergmed.2018.03.032.
2. Phillips AW, Klauer KM, Kessler CS. Emergency physician evaluation of PA and NP practice patterns. *JAAPA*. 2018;31(5):38-43.
3. Menchine MD, Wiechmann W, Rudkin S. Trends in midlevel provider utilization in the emergency departments from 1997 to 2006. *Acad Emerg Med*. 2009;16:963–969.
4. American College of Emergency Physicians. 2016 Model of the Clinical Practice of Emergency Medicine. [policy statement]. Approved September 2016.
5. American College of Emergency Physicians. Ultrasound Guidelines: Emergency, Point-of-Care, and Clinical Ultrasound Guidelines in Medicine. [policy statement]. Approved June 2016. Accessed April 30, 2019.
6. American College of Emergency Physicians. Guidelines Regarding the Role of Physician Assistants and Advanced Practice Registered Nurses in the Emergency Department. [policy statement]. Approved June 2013. Accessed April 30, 2019.
7. Chin, E. and Summers, S. (2018). Point of Care Ultrasound Issues for Advanced Practice Providers and Nursing Programs. In: V. Tayal, M. Blaivas and T. Foster, ed., *Ultrasound Program Management*, 1st ed. Springer International Publishing, pp.115-125.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Advertising and Publicity of Emergency Medical Care

Revised January 2019

Reaffirmed June 2013

Revised October 2007 replacing "Positive Promotions"

Approved October 2000 with current title, replacing "Physician Advertising"

Originally approved June 1984 titled "Physician Advertising"

The American College of Emergency Physicians (ACEP) believes:

- Emergency physicians, emergency medicine groups and health institutions may publicize themselves through any commercial media or other form of public communication provided that the information is true and accurate and in no way deceptive or misleading. Claims regarding experience, competence, quality, or unique qualifications or resources only may be made if they are factually supportable.
- Patients may be confused by unfamiliar terms and by illustrations that are difficult to understand or are misleading. Advertising and publicity should be designed in a manner that is readily comprehensible.
- Physicians, other health care providers, and health care facilities should emphasize in advertising their own positive attributes and should not denigrate the capabilities of other providers or facilities.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Advocating for Certified Emergency Nurses (CENs) in Departments of Emergency Medicine

Reaffirmed January 2024,
February 2018, April 2012

Originally approved
October 2006

The American College of Emergency Physicians supports the efforts of the Emergency Nurses Association (ENA) and the Board of Certification for Emergency Nursing (BCEN) regarding defining standards of emergency nursing care and the provision of resources, support, and incentives for emergency nurses to be able to readily attain Certified Emergency Nurses (CEN) certification.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2018

Alcohol Advertising

Revised April 2018

Reaffirmed October 2006 and October 2012

Revised July 2000 by combining CR012 approved September 1992 and CR038 approved September 1985

The American College of Emergency Physicians (ACEP) recognizes that alcohol misuse and abuse are significant risk factors for preventable diseases, injuries, and premature death. ACEP also acknowledges that print, broadcast, internet, and social media advertising of alcohol may play a significant role in promoting underage and unhealthy alcohol consumption. Therefore, ACEP strongly opposes the promotion of alcohol which: 1) may be perceived as directed towards youth; 2) draws a positive correlation between physical performance and the consumption of alcoholic beverages; and 3) depicts the irresponsible use of alcohol without showing its adverse consequences.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Animal Use in Research

Revised April 2020

Reaffirmed April 2014, October 2008, February 2002, and March 1997

Revised June 1992 with current title

Originally approved September 1987 titled "The Humane Use of Animals in Research"

The American College of Emergency Physicians (ACEP) supports the responsible use of animals in biomedical research and ongoing discussion regarding the moral status of animals and the proper scope and limits of the use of animals in research.

ACEP therefore endorses the following principles regarding use of animals in research:

- Research using animals has been and will, in the foreseeable future, continue to be essential to scientific advances in emergency medicine and in health care in general.
- ACEP endorses the humane and responsible use of animals in scientifically sound research in order to achieve the significant benefits of improved treatment for humans and animals.
- Animals should not be subjected to research unnecessarily or arbitrarily. ACEP recognizes that the great benefits of improved treatment for humans and animals are gained at the moral cost of the infliction of pain, suffering, and death on animal research subjects. Researchers are obligated to refine their techniques to minimize or eliminate animal pain and suffering, to reduce the number of animals used in research to the minimum necessary to achieve scientifically valid research goals, and to use alternatives to animal research wherever possible.
- Institutional animal care and use committees should be used to review animal research protocols and to monitor animal care facilities and laboratories based on federal regulations designed to ensure animal welfare.

ACEP respects the moral convictions and the free speech rights of those who oppose the use of animals in some or all research and supports a continuing dialogue among those who hold different positions on this important issue. While ACEP respects differences of opinion, it does not support violent or illegal acts to disrupt or discourage animal research.

ACEP encourages its members to study the ongoing debate over animal research and to contribute to that debate from their valuable perspective as emergency physicians.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Anonymous Affidavits of Merit

Revised April 2022

Originally approved June 2016

Affidavits of merit provided by the plaintiff's expert witness are required in some jurisdictions to assure that a legal case has a substantive basis for filing purposes. Their stated intent is to reduce the number of frivolous lawsuits. Anonymous affidavits of merit are uncommon; however, in some cases and regions courts allow affidavits of merit to be filed anonymously.

Anonymous testimony, in any form, prevents confirmation of the expert's qualifications, authoritative expertise, and potential bias, all of which are crucial to fair and proper evaluation of claims.

The American College of Emergency Physicians (ACEP) opposes the admission of anonymous affidavits of merit in medical malpractice litigation and other judicial proceedings.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Anonymous Complaints to State Licensing Boards by Third Parties

Reaffirmed June 2021

Originally approved June 2015

The American College of Emergency Physicians (ACEP) believes several problems are created when state medical licensing boards permit anonymous reporting of complaints about physicians by individuals who were not directly aggrieved by the physician:

- Allows third parties not directly associated with the patient care (such as a plaintiff attorney anonymously reporting physicians prior to suing them) to file such a claim.

- Leads to difficulty in fully investigating the complaints. Anonymous reporting does not give an accused physician an adequate, fair opportunity to contest the accuracy of the reporting.

ACEP is strongly opposed to anonymous complaints made to state medical licensing boards from third parties not directly involved in the episode of care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Anonymous Expert Physician Testimony for a State Medical Licensing Board

Reaffirmed June 2021

Originally approved June 2015

The primary responsibility and obligation of state medical boards is to protect consumers of health care by ensuring that all physicians are properly licensed and comply with various laws and regulations pertaining to the practice of medicine. Anonymous physician expert testimony is permitted by some state medical licensing boards. Such testimony does not provide the accused physician the ability to respond adequately to the accuracy of the testimony. While the courts have permitted anonymous testimony in rare cases of criminal litigation, it permits so only when there is a significant risk of harm to the individual or their family.

Therefore, the American College of Emergency Physicians (ACEP) endorses the following principles:

- State licensing boards should not accept anonymous testimony as expert opinions for or against a physician under review.
- ACEP will consider that any member who provides anonymous expert testimony for or against another physician shall have violated their professional ethical responsibility.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2020

Antimicrobial Stewardship

Originally approved June 2020

Antimicrobial resistance and the reduction of remaining effective antimicrobial armamentarium represent a critical threat to the public health and health of patients in emergency departments throughout the United States and the world. Antimicrobial stewardship programs aim to optimize antimicrobial usage for clinical efficacy while minimizing adverse drug events, selective pressures that drive the emergence of resistance, and costs due to suboptimal antimicrobial use. The American College of Emergency Physicians (ACEP) supports and encourages the engagement of emergency physicians and emergency departments (EDs) in antimicrobial stewardship efforts at all levels.

For clinicians, engagement includes, but is not limited to, practicing the "five D's" of antimicrobial stewardship: drug, dose, duration, de-escalation, and diagnosis. Ideally, the prescriber will select the right drug (eg, most narrow spectrum), at the right dose (eg, adjusted for patient weight, renal function, etc.), for the right duration (eg, shortest to successfully treat infection), and consider de-escalation when possible (eg, narrow spectrum based on microbiological culture results). Accurate diagnosis, the fifth "D" of stewardship, is a critical concept in antimicrobial stewardship, as it underscores the importance of avoiding antibiotics for nonresponsive conditions. As the majority of pediatric infections are viral in origin, emergency physicians treating children should be mindful of current recommendations regarding diagnosis and treatment of common infections, with an emphasis on avoiding antibiotics for nonresponsive conditions, including upper respiratory tract infections (eg, bronchitis, sinusitis), reactive airway disease, asymptomatic bacteriuria, pseudocellulitis, and viral exanthems. Patient/guardian education on when antibiotics are not indicated, and why, provide teachable moments to advance antimicrobial stewardship best practices in the ED.

For emergency physician quality champions, medical directors, and other senior leaders, engagement should begin with conducting an institutional review of current antimicrobial stewardship efforts, securing leadership commitment, and developing relevant policies, procedures, data collection, and metrics that are inclusive of all patient populations, including pediatrics. For institutions with sufficient patient volumes and resources, emergency physicians should consider use of ED-specific antibiograms, educational materials, and electronic health record support tailored to adult and pediatric patient populations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Antitrust

Reaffirmed January 2019, June 2013 and October 2007

Revised October 2001 and June 1996

Approved April 1994

The American College of Emergency Physicians is a national not-for-profit professional organization that exists to support quality emergency medical care and to promote the interest of emergency physicians. The College is not organized to and may not play any role in the competitive decisions of its members or their employees, nor in any way restrict competition among members or potential members. Rather it serves as a forum for a free and open discussion of diverse opinions without in any way attempting to encourage or sanction any particular business practice.

The College provides a forum for exchange of ideas in a variety of settings including its annual meeting, educational programs, committee meetings, and Board meetings. The Board of Directors of the College recognizes the possibility that the College and its activities could be viewed by some as an opportunity for anti-competitive conduct. Therefore, the Board is promulgating this policy statement to clearly and unequivocally support the policy of competition served by the antitrust laws and to communicate the College's uncompromising policy to comply strictly in all respects with those laws.

While recognizing the importance of the principle of competition served by the antitrust laws, the College also recognizes the severity of the potential penalties that might be imposed on not only the College but its members as well in the event that certain conduct is found to violate the antitrust laws. Should the College or its members be involved in any violation of federal/state antitrust laws, such violation can involve both civil as well as criminal penalties that may include imprisonment for up to 3 years as well as fines up to $350,000 for individuals and up to $10,000,000 for the College plus attorney fees. In addition, damage claims awarded to private parties in a civil suit are tripled for antitrust violations. Given the severity of such penalties, the Board intends to take all necessary and proper measures to ensure that violations of the antitrust laws do not occur.

In order to ensure that the College and its members comply with the antitrust laws, the following principles will be observed:

- The American College of Emergency Physicians or any committee, section, chapter, or activity of the College shall not be used for the purpose of bringing about or attempting to bring about any understanding or agreement, written or oral, formal or informal, expressed or implied, among two or more members or other competitors with regard to prices or terms and conditions of contracts for services or products. Therefore, discussions and exchanges of information about such topics will not be permitted at College meetings or other activities.
- There will be no discussions discouraging or withholding patronage or services from, or encouraging exclusive dealing with any health care provider or group of health care providers, any supplier or purchaser or group of suppliers or purchasers of health care products or services, any actual or potential competitor or group of actual potential competitors, any patients or group of patients, or any private or governmental reimburser.
- There will be no discussions about allocating or dividing geographic or service markets, customers, or patients.
- There will be no discussions about restricting, limiting, prohibiting, or sanctioning advertising or solicitation that is not false, misleading, deceptive, or directly competitive with College products or services.
- There will be no discussions about discouraging entry into or competition in any segment of the health care market.
- There will be no discussions about whether the practices of any member, actual or potential competitor, or other person are unethical or anti-competitive, unless the discussions or complaints follow the prescribed due process provisions of the College's bylaws.
- Certain activities of the College and its members are deemed protected from antitrust laws under the First Amendment right to petition government. The antitrust exemption for these activities, referred to as the Noerr-Pennington Doctrine, protects ethical and proper actions or discussions by members designed to influence: 1) legislation at the national, state, or local level; 2) regulatory or policy-making activities (as opposed to commercial activities) of a governmental body; or 3) decisions of judicial bodies. However, the exemption does not protect actions constituting a “sham” to cover anticompetitive conduct.
- Speakers at committees, educational meetings, or other business meetings of the College shall be informed that they must comply with the College's antitrust policy in the preparation and the presentation of their remarks. Meetings will follow a written agenda approved in advance by the College or its legal counsel.
- Meetings will follow a written agenda. Minutes will be prepared after the meeting to provide a concise summary of important matters discussed and actions taken or conclusions reached.

At informal discussions at the site of any College meeting all participants are expected to observe the same standards of personal conduct as are required of the College in its compliance.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Appropriate and Safe Utilization of Helicopter Emergency Medical Services

Reaffirmed September 2018

Originally approved April 2011

As an adjunct to this policy, ACEP has prepared a Policy Resource and Education Paper (PREP) titled, "Appropriate and Safe Utilization of Helicopter Emergency Medical Services"

A joint policy statement of the Air Medical Physician Association (AMPA), the American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the American Academy of Emergency Medicine (AAEM)

We believe:

That patients benefit from the appropriate utilization of Helicopter Emergency Medical Services (HEMS).

That EMS and regional healthcare systems must have and follow guidelines for HEMS utilization to facilitate proper patient selection and ensure clinical benefit. Clinical benefit may be provided by:

- Meaningfully shortening the time to delivery of definitive care to patients with time-sensitive medical conditions.
- Providing necessary specialized medical expertise or equipment to patients before and/or during transport.
- Providing transport to patients otherwise inaccessible by other means of transport.

That the decision to utilize HEMS is a medical decision, separate from the aviation determination whether a transport can safely be completed.

- Physicians with specialized training and experience in EMS and air medical transport must be integral to HEMS utilization decisions, including guideline development and HEMS quality improvement activities.
- Federal Aviation Administration approved Safety Management Systems must be developed, adopted, and adhered to by air medical operators when making decisions to accept and continue each and every HEMS transport.

That HEMS must be fully integrated within the local, regional, and state emergency health care system.

- HEMS programs cannot operate independent of the surrounding health care environment.

- The EMS and health care system must be involved in the determination of the number of HEMS assets necessary to provide appropriate coverage for their region. Excessive resources may lead to competitive practices that can impact utilization and ultimately affect safety. Inadequate resources will result in delayed receipt of definitive care.

We further believe that:

- National guidelines for appropriate utilization of HEMS must be developed. These guidelines should be national in scope yet allow for local, regional, and state implementation.
- A National HEMS Agenda for the Future should be developed to address HEMS utilization and availability, and to identify and support a research strategy for ongoing, evidence-based refinement of utilization guidelines.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Appropriate Interfacility Patient Transfer

Revised January 2022, January 2016 with current title, February 2009, February 2002, June 1997, September 1992 titled "Appropriate Inter-Hospital Patient Transfer"

Originally approved September 1989 as a position statement titled "Principles of Appropriate Patient Transfer"

The American College of Emergency Physicians (ACEP) believes that quality emergency care should be universally available and accessible to the public. For patients evaluated or treated in the emergency department (ED) who require transfer from the ED to another facility, ACEP endorses the following principles regarding patient transfer.

- The optimal health and well-being of the patient should be the principal goal of patient transfer.
- Emergency physicians, physician assistants (PAs) and nurse practitioners (NPs), and facility personnel should abide by applicable laws regarding patient transfer. All patients should be provided a medical screening examination (MSE) and stabilizing treatment within the capacity of the facility before transfer. If a competent patient requests transfer before the completion of the MSE and stabilizing treatment, these services should be offered to the patient and informed refusal documented.
- The transferring facility is responsible for informing the patient or responsible party of the risks and the benefits of transfer and document these. Before transfer, patient consent should be obtained and documented whenever possible.
- The medical facility's policies and procedures and/or medical staff bylaws should identify the individuals responsible for and qualified to perform MSEs. The policies and procedures or bylaws must define who is responsible for accepting and transferring patients on behalf of the hospital. The examining physician at the transferring hospital should use his or her best judgment regarding the condition of the patient when determining the timing of transfer, mode of transportation, level of care provided during transfer, and the destination of the patient.
- The mode of transportation used for transfers should be at the discretion of the treating emergency physician, PA, or NP and based on the individual clinical situation, available options, needed equipment and patient preference. Options for transport include but are not limited to ambulance, air-transport, and private vehicle. Regardless of the method of transfer, intravenous access may remain in place if deemed appropriate by the referring emergency physician, PA, or NP.

- Payment for transport should not be retrospectively denied by insurance companies.
- Agreement to accept the patient in transfer should be obtained from a physician or responsible individual at the receiving hospital in advance of transfer. When a patient requires a higher level of care other than that provided or available at the transferring facility, a receiving facility with the capability and capacity to provide a higher level of care may not refuse any request for transfer.
- All pertinent records and copies of imaging studies should accompany the patient to the receiving facility or be electronically transferred as soon as is practical.
- When transfer of patients is part of a regional plan to provide optimal care at a specialized medical facility, written transfer protocols and interfacility agreements should be in place.

To ensure optimal patient care, nonhospital medical facilities should abide by transfer standards much the same as those outlined above. Laws and regulations relevant to the Emergency Medical Treatment and Labor Act[1](EMTALA) exist in many states. Physicians, PAs, or NPs who participate in patient transfer decisions should be aware of applicable federal and state-specific transfer laws and regulations.

The Emergency Medical Treatment and Active Labor Act, as established under the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 (42 USC 1395 dd) and 42 CFR 489.24; 42 CFR 489.20 (EMTALA regulations).

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Appropriate Use Criteria for Handheld/Pocket Ultrasound Devices

Originally approved June 2018

Technological advances have allowed miniaturization of ultrasound technology such that point-of-care ultrasound is available for use with modern tablets and smartphones. Since 2009, a multitude of products have become available in the U.S. market for use with both iOS and Android operating systems. These "pocket devices" target both the in-hospital and out-of-hospital markets. Some have the ability to store patient data, interface wirelessly with image archival systems, and insert information into electronic health records or electronic workflow solutions. They have demonstrated image quality comparable to conventional machines when used by trained physicians, and good concordance with CT imaging.[1-5] Now that accessibility to point-of-care ultrasound has dramatically increased, guidelines promoting responsible use of these systems are required.

The same applications that have been set as standard for point-of-care ultrasound practice apply to pocket devices. The American College of Emergency Physicians (ACEP) policy, "Ultrasound Guidelines: Emergency, Point-of-care, and Clinical Ultrasound Guidelines in Medicine" contains detailed descriptions regarding settings of use, scope of practice, training, credentialing, quality assurance, and reimbursement.[6]

1. Information Security and Workflow
    a) As with currently standard ultrasound machine types, tablet and smartphone ultrasound should be supervised and used only by qualified health professionals.[6] At this time, some devices may only be purchased by licensed physicians.
    b) Equipment used in a clinical setting should be approved by the hospital, clinical department, medical group, or other institution.
        i) This includes both the tablet or phone and the transducer(s).
        ii) If a physician wishes to purchase a device using personal funds and intends to apply this device to his or her clinical environment (whether for education, diagnosis or both), he or she should discuss this with relevant hospital services including but not

Limited to information technology and security, bioengineering, legal and risk services and department administration.

iii) A health professional should not use personally-purchased devices in a clinical setting without approval from the above services, as this may violate patient safety including Health Insurance Portability and Accountability Act (HIPAA) compliance, and hospital information security practices or medicolegal processes.

c) Pocket devices should be designed to implement neatly into institutional workflow solutions and electronic health record systems. They should facilitate integration of images into the institution's picture archiving and communication systems, or other relevant systems. They should enable provision of and access to documentation of examination findings in the electronic health record.

2. Bioeffects and Safety
   a) All machines, including pocket devices, should display safety profiles including mechanical index and thermal index.
   b) All health professionals using ultrasound should understand these basic safety principles.
   c) Devices that generate heat should have mechanisms to advise the operator when overheating is an issue. Examinations should be stopped if a patient complains of discomfort from heat.
   d) The transducers, tablets and smartphones should all follow Guidelines for Cleaning as proposed by ACEP. Transducers that attach to pocket devices should not be used in situations that require high level disinfection (eg, intraoral, endovaginal) unless otherwise specified by the company, as they may not be designed for invasive purposes or built to withstand high level disinfection agents. Purchasers should discuss with vendors the applications appropriate for these devices and ensure they meet FDA clearance.

3. Use in Clinical Practice
   a) Emergency ultrasonography, and therefore many aspects of clinical ultrasonography, is a "separate entity distinct from the physical examination that adds anatomic, functional and physiologic information to the care of the acutely-ill patient."[6]
   Ultrasound is a stand-alone diagnostic test that is not comparable to other bedside instruments that simply enhance the provider's own senses (eg, stethoscope auscultation amplifies auditory information already available to the provider). It converts high frequency inaudible sound waves into electrical impulses that produce clinically significant data surpassing what is obtainable by physical examination. Interpretation of this complex information requires substantial additional training to use accurately and effectively.
   b) As such, examinations performed using a pocket device may be treated the same as examinations performed using a conventional machine,[7] provided images obtained are of diagnostic quality.
   c) Use of information from the pocket device that does not fulfill criteria for a diagnostic examination[6] (eg, simply writing a narrative of the findings in the patient record without retaining images), should be in compliance with written policies of the institution or practice.
   d) Examinations completed for diagnostic or procedural purposes using pocket devices should be performed or supervised by credentialed and privileged providers and should comply with the credentialing and privileging requirements of the department and institution.
   e) Similar to examinations performed using standard point-of-care ultrasound machines, examinations performed using pocket devices should undergo similar documentation processes that reflect the nature of the exam and its relevant findings. Documentation as dictated by regulatory and payer entities may be more extensive, and examples can be found in the ACEP Emergency Ultrasound Standard Reporting Guidelines.[8]
   f) Prudent judgement regarding applications performed using pocket ultrasound for diagnostic purposes should be made. Examinations completed should be relevant to a patient's chief complaint(s).

g) Pocket ultrasound devices may add value to the medical system by increasing availability and knowledge of clinical ultrasonography. Hospital-wide deployment of pocket ultrasound may:
   i) Improve departmental and extra-departmental resource utilization
   ii) Improve patient safety by reducing medical errors in decision-making, treatment and procedures
   iii) Improve communication and transfers of care
   iv) Avoid premature discharge and return visits
   v) Facilitate telemedicine and teleguidance
   vi) Improve education and point-of-care ultrasound performance using augmented reality and automated machine guidance

h) As such, examinations performed using pocket devices that are archived and documented appropriately should be eligible for billing and reimbursements similar to current practices using conventional compact or cart-based machines.[9]

i) Professional billing should not be affected by self-purchase of a device (if allowed by the institution) but technical fees may be affected.[10] Consultation with the department, institution, hospital system or legal counsel may be advised.

References

1. Bobbia X, Chabannon M, Chevallier T, et al. Assessment of five different probes for lung ultrasound in critically ill patients: A pilot study. *Am J Emerg Med*. 2018; pii: S0735-6757(18)30269-9. doi: 10.1016/j.ajem.2018.03.077. [Epub ahead of print]
2. Ameda T, Uebayashi K, Wagai K, et al. Assessment of the renal collecting system using a pocket-sized ultrasound device. *J Med Ultrason*. 2018; doi:10.1007/s10396-018-0881-2. [Epub ahead of print]
3. Lau BC, Motamedi D, Luke A. Use of pocket-sized ultrasound device in the diagnosis of shoulder pathology. *Clin J Sports Med*. 2018; doi:10.1097/JSM.0000000000000577. [Epub ahead of print]
4. Pujol S, Laurent J, Markarian T, et al. Compression with a pocket-sized ultrasound device to diagnose proximal deep vein thrombosis. *Am J Emerg Med*. 2018; pii:S0735-6757(18)30268-7. doi: 10.1016/j.ajem.2018.03.076
5. Colli A, Prati D, Fraquelli M, et al. The use of a pocket-sized ultrasound device improves physical examination: results of an in- and outpatient cohort study. *PLoS One*. 2015;10(3):e0122181.
6. American College of Emergency Physicians. Ultrasound guidelines: Emergency, point-of-care and clinical ultrasound guidelines in medicine. [policy statement] *Ann Emerg Med*. 2017 May;69(5):e27-54.
7. Liu RB, Moore CL, Tayal VS. (2018). Ultrasound equipment and purchase. In V.S. Tayal, M. Blaivas, T.R. Foster (Eds.), *Ultrasound Program Management: A Comprehensive Resource for Administrating Point-of-Care, Emergency, and Clinical Ultrasound* (1st ed., pp. 145-176). Cham, Switzerland: Springer International Publishing AG.
8. American College of Emergency Physicians. Emergency Ultrasound Standard Reporting Guidelines. https://www.acep.org/globalassets/uploads/uploaded-files/acep/by-medical-focus/ultrasound/eus_srgs_111511_edited0116.pdf. Retrieved 2018-05-23.
9. Goldstein JR, Wu S. (2018). Point of Care Ultrasound Reimbursement and Coding. In V.S. Tayal, M. Blaivas, T.R. Foster (Eds.), *Ultrasound Program Management: A Comprehensive Resource for Administrating Point-of-Care, Emergency, and Clinical Ultrasound* (1st ed., pp. 345-374). Cham, Switzerland: Springer International Publishing AG.
10. Physician Self Referral. *Centers for Medicare and Medicaid Services*. https://www.cms.gov/Medicare/Fraud-and-Abuse/PhysicianSelfReferral. Retrieved 2018-05-28.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Appropriate Use of Race in Research

Originally approved June 2023

The American College of Emergency Physicians (ACEP) is committed to assure the appropriate use of race in science and to avoid any detrimental impact on Black, Indigenous, and People of Color (BIPOC) due to its improper use. Race is a social construct, not a biological or genetic taxonomy, but it nonetheless has extensive, well documented, health implications. This is a consequence of structural racism, which exists throughout society, including healthcare, and has resulted in decades of diminished health, educational, occupational, and economic opportunities for BIPOC populations. Structural racism and racial bias also influence the research enterprise, contributing to research and research-products which accentuate disparities. Accordingly, use of race, ethnicity, and other demographic variables in research can be critical to identify, understand and reduce resulting disparities, but investigators should follow best practices to mitigate risk of detrimental impact on BIPOC and other minority and disadvantaged populations. Thus, **ACEP acknowledges that race is an important variable in research but cautions against its capricious use, without deeper understanding of its sources and meaning.**

The following best practices are recommended to reduce racism and racial bias in emergency medicine research.

1. Write a subsection of the methods that clearly describes the source of the race data: self-reported, observer assigned, extracted from administrative or clinical records, etc.
2. Provide an inclusion enrollment report, and indicate whether the racial/ethnic composition of those enrolled in the study is representative of the population from which the study participants were drawn. The study population should be specific with respect to the condition being studied.
3. Only draw those conclusions that are supported by the actual findings of the study. In particular, note, as applicable, that association is not causation. Include a discussion supported by science of potential causal pathways for race-related results, discrepancies, or disparities including the role of structural, institutional, and interpersonal racism on the outcomes being studied. Discuss their implications for designing interventions to improve disparate outcomes.
4. Take particular care in writing so that comments do not inadvertently stigmatize or mislabel populations.

5. Encourage diversity among the research team to obtain relevant perspectives when designing and conducting the study.
6. Encourage direct engagement of communities impacted by the research during appropriate phases of the research process. It is particularly important to consider such perspectives in the interpretation of study results.
7. When racial data is reported and interpreted, assess for corresponding representation at the writing, editorial, and peer review levels.
8. Consider use of qualitative methods to gain a deeper understanding of the causes of race-related results, disparities, or implications.
9. Seek to understand the extent to which algorithms, decision rules, or calculators accentuate health disparities, and avoid their use if such a situation occurs.
10. Encourage editorial discussions and commentaries as well as other outreach from the research community to discuss the implications and interpretations of studies with race-related results. (eg, how data should not be misinterpreted by employers, insurance companies, or financial institutions to disadvantage already marginalized populations).

A thoughtful and vigilant approach is needed to overcome the impact of structural racism and racial discrimination where it may exist on research and healthcare. Researchers, peer reviewers, editors, and educators are encouraged to apply these best practices while designing, reviewing, editing, and teaching about research studies.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Assignment of Benefits

Reaffirmed January 2024,
February 2018, April 2012

Originally approved
April 2006

The American College of Emergency Physicians (ACEP) believes that a valid assignment of benefits should be honored by all payers. Compliance with a valid assignment of benefits is in the best interest of the patient, the payer, and the medical provider for the fair and efficient payment of medical claims.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Audiovisual Recording in the Emergency Department

Revised June 2019 with current title

Revised January 2017 titled "Recording Devices in the Emergency Department"

Originally approved April 2011

ACEP believes that

In emergency department (ED) patient-care areas, patients and staff have a reasonable expectation of privacy. Because audiovisual recordings made without explicit consent may compromise their privacy and confidentiality, such recordings should not be permitted, particularly when they contain personally identifiable information. Consent should be obtained prospectively from ED staff, patients, and from the surrogates of patients without decision making capacity, such as minors or those undergoing resuscitative procedures. Time-sensitive recordings of patients without decision-making capacity and no available surrogate may sometimes be made, but those making the recordings must later obtain patient or surrogate consent to retain or use those recordings. Emergency physicians (EPs) and physician organizations should promote the adoption of consistent national and local policies to protect ED patient privacy and confidentiality.

In addition, ACEP believes that

- Recording encompasses producing still images, audio files, or audiovisual materials. They can be made using both organizationally and personally owned equipment and devices including cellphones.
- Recording ED staff or patients should be a deliberate decision. Use of always-on recording devices, whether by hospital personnel, law enforcement officers, or other persons, should be regulated and restricted to areas in which patient care is not occurring and there is no reasonable expectations of privacy and confidentiality.
- Emergency medicine professional organizations should work within their states with other medical organizations, law enforcement, hospitals, patient advocacy groups, legislators and other public officials to generate legal restrictions to body camera use in the ED.
- Healthcare institutions should provide HIPAA-compliant methods to store and transmit healthcare-sensitive recordings securely.
- Healthcare organizations and institutions should recognize that HIPAA-compliant audiovisual materials may *benefit patients*. They should promote the creation and use of audiovisual educational materials to help patients understand and recall vital parts of their ED experience and discharge instructions.

- Healthcare organizations and institutions should recognize the growing value of and encourage the use of *recordings for professional* publication, education, research, and quality assurance/quality improvement when they are made with ethically and legally appropriate patient and staff safeguards. Images that cannot be linked to a patient, e.g., de-identified radiographic/MR/CT/ultrasound images, pathology specimens, or restricted areas of the body may not fall under these constraints.
- Clinicians recording patients in international settings should be guided by the same ethical norms as they are in their home country.
- Healthcare institutions and departments should establish protocols that include both procedures for obtaining consent to record and publish (print or electronic) images and appropriate disciplinary measures for staff who violate them.
- Healthcare institution security services may, with proper HIPAA safeguards, use audiovisual recordings to enhance patient and staff safety, including in hallways used for patient overflow. Use of privacy screens is encouraged. Only authorized personnel should have access to these recordings.
- EDs and institutions should publicly post their rules governing ED recordings, including a ban on surreptitious or unconsented recordings by any person.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Autonomous Self-Driving Vehicles

Originally approved January 2019

More than one hundred Americans die daily in motor vehicle accidents, and many more are injured or severely disabled. Worldwide, the death toll is well over one million annually. Innovations in autonomous vehicle technology have the potential to drastically reduce transportation-related injuries while improving access to health care for vulnerable populations and reducing the cost and time spent on transportation.

Decades of analysis of conventional automobile crashes have led to incremental improvements in safety. Because the lessons learned from smart vehicle near-misses and incidents can be more readily analyzed and disseminated, the advent of these technologies will accelerate this quality improvement process. When fully mature, the technology piloting autonomous vehicles will operate with the encoded equivalent of centuries of human driving experience. Eventually, these transportation systems will be much safer than the vehicles of today.

Injuries involving self-driving cars have garnered public attention because of the novelty of the incidents and the technology involved. Incomplete reporting has the potential to sour public opinion and delay by years the advent of smart transportation systems. Unlike previous innovations such as seat belts and airbags, increased vehicle autonomy will be accompanied by a complex and inevitable shift in liability from drivers to product manufacturers and service providers, potentially endangering the development and widespread availability of this potentially life-saving technology.

Given the significant societal benefits of mature autonomous vehicle technology, the American College of Emergency Physicians (ACEP):

- Encourages a coordinated effort by advocacy groups, transportation companies, vehicle manufacturers, federal and state agencies, and the medical community to leverage autonomous vehicle technology to reduce the injury and death associated with transportation.
- Urges its members to provide a leadership role in defining public policy, developing guidelines and securing adequate funding for enhancement and implementation of autonomous transportation systems, as well as performing and evaluating outcomes research to determine the public health impact of this new technology.

- Supports the exploration of strategies to define and mitigate liabilities.
- Encourages state governments and local municipalities to actively oversee and promote the prudent use and fielding of appropriately tested autonomous driving systems on public roads.
- Applauds the innovative efforts of lawmakers and the National Highway Traffic Safety Administration to update the regulatory framework to facilitate the development of driverless technologies while maximizing public safety.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Availability of Hospital Diagnostic and Therapeutic Services

Reaffirmed January 2024, February 2018

Revised April 2012

Originally approved October 2005 as Council Resolution CR45

The American College of Emergency Physicians supports policies that endorse 24-hour a day availability of those hospital diagnostic and therapeutic services needed to prevent avoidable morbidity and mortality, in order to facilitate timely disposition of emergency department patients and to minimize hospital crowding.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved August 2023

Best Practice Guidelines for Evaluating Patients in Custody in the Emergency Department

Originally approved August 2023

Evaluating and treating patients in law enforcement custody can be challenging. As with all encounters, emergency physicians (EPs) must balance their responsibilities and ethical obligations to the patient with the safety of the department, its personnel, other patients, and visitors. For this patient population, EPs must first refer to institutional policy for operational guidance on the provision of care. EPs must also consider relevant local, state, and federal rules and statutes. Hospital legal counsel or risk management may help interpret these policies and statutes or clarify situations that are not explicitly addressed. Early communication with law enforcement personnel regarding their responsibilities, governing policies, and protocols is also beneficial to understand their constraints. In addition to specific guidance from the above resources, EPs may use the following principles to guide care:

1. Physicians have a responsibility to respect the autonomy, privacy, and dignity of patients in custody and to recognize the security and safety concerns of law enforcement, the care team, and the community. EPs should work with patients and stakeholders, including law enforcement, to evaluate each situation based on available information and act accordingly.
2. Under EMTALA, physicians are required to provide these patients with an appropriate medical screening examination within the capability of the hospital's emergency department to determine whether or not an emergency medical condition exists.
3. Post-conviction patients who are incarcerated have a constitutional right to health care under the Eighth Amendment.
4. Patients in custody make their own medical decisions if they have decision-making capacity. They may also appoint a surrogate decision-maker using a written advance directive, medical power of attorney, or verbal designation. Physicians should communicate with law enforcement officers when surrogate or emergency contact information is needed.
5. It is ethically unjustifiable for wardens or other prison officials to serve as a patient's surrogate decision-maker unless explicitly chosen by the patient.

6. Considerations during the patient encounter:
   a. History-Taking
      i. As much of the history as possible should be obtained from the patient. In situations where the patient only can provide limited history, collateral sources of information, including accompanying officers, may be helpful.
      ii. Consider asking officers to turn off recording devices (such as body cameras) and to step out of earshot (if caregivers' safety can be assured) while the history is being taken. Officers may decline this request due to relevant policy or safety concerns.
      iii. Unless directly related to medical decision-making or safety concerns, neither look up nor solicit information about the crime or offense these patients may have committed as it can further stigmatize them and bias care.
   b. Physical Exam
      i. Use appropriate draping techniques during the physical exam. Examine sensitive areas such that they cannot be easily viewed by others in the room or request that only officers who are gender-concordant with the self-identified gender of the patient be present in the room during sensitive exams.
      ii. Communicate with law enforcement officers to facilitate necessary physical exam and delivery of care. This may involve requesting non-medical restraints be adjusted or removed, which may not be honored if a security risk is posed.
   c. Documentation
      i. Documentation of the patient encounter should accurately describe the chief concern, its related symptoms, and should justify medical decision-making.
      ii. Avoid using stigmatizing language.
      iii. Given variable recognition of physician-patient privilege in court and exceptions to HIPAA when law enforcement investigates criminal activity, EPs should not guarantee to the patient that information shared verbally by a patient or documented in the ED note will not be used as evidence in court.
   d. Disposition
      i. Share decision-making with the patient, if possible.
      ii. Absent a legal directive, court order, or patient consent, share with law enforcement officers only the personal health information necessary to ensure that the patient gets proper follow-up and aftercare. The details of medical decision-making should not be shared with law enforcement.
7. Considerations from a law enforcement and security perspective:
   a. Law enforcement's main priorities are to maintain public order, manage public safety, supervise patients in custody, and ensure these patients remain detained.
   b. Recognize that sharing certain information with a patient, their surrogate decision-makers, or their emergency contacts (such as patient location and timing of follow-up appointments) may pose a security risk. Communication and consultation with law enforcement officers before sharing information may help mitigate this risk.
   c. EPs should make a reasonable effort to preserve physical evidence and maintain chain of custody.
8. Patients in custody may accept or decline interventions such as physical exam and diagnostic workup if they have decision-making capacity, but this is not an absolute right. Circumstances in which they may not refuse interventions include, but are not limited to, the following:
   a. They may not refuse testing or treatment for high-risk communicable diseases that pose a public health risk (such as tuberculosis and bacterial meningitis).
   b. They may not refuse involuntary treatment of agitation if they pose a danger to themselves or others.
   c. They may not refuse additional forensic testing on specimens that have already been collected for medical reasons.

9. If patients in custody do not consent to an intervention (such as diagnostic workup, physical exam, or a body cavity search) and there is no medical indication for the intervention, it should not be performed in the emergency department.
10. As stated in the ACEP policy Law Enforcement Information Gathering in the Emergency Department, EPs may conscientiously object to complying with legal orders that violate the rights or jeopardize the welfare of their patients acknowledging that there may be legal ramifications to these actions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Bloodborne Pathogens in Emergency Medicine

Revised April 2023, June 2017 with current title, April 2011, April 2004, October 2000 titled "Bloodborne Infections in Emergency Medicine"

Originally approved September 1996 titled "HIV and Bloodborne Infections in Emergency Medicine"

Human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), and other bloodborne pathogens present emergency department (ED) health care workers with the two-fold challenge of 1) ensuring that all ED patients have adequate access to care irrespective of their infectious disease status, and 2) preventing transmission of bloodborne pathogens to health care workers and other ED patients.

The American College of Emergency Physicians (ACEP) endorses the following recommendations relating to the care of ED patients and health care workers who provide this care:

Patients

- All ED patients should receive appropriate emergency care regardless of risk factors for acquiring or having a bloodborne infection (eg, HIV, HBV, HCV).
- Mandatory HIV, HBV, or HCV testing should not be a condition for receiving emergency care, although testing for HIV, HBV, or HCV should be considered when clinically indicated.
- EDs should provide appropriate linkage to follow-up care for patients who test positive for bloodborne infections.
- Universal, opt-out HIV screening of adolescents (ages 13 and up) and adults, including pregnant patients, is encouraged; patients should be made aware of existing opt-out screening policies.
    - EDs should provide rapid start antiretroviral treatment (ART) for patients who test positive for HIV when feasible.
    - ED physicians should consider discussing and providing HIV pre-exposure prophylaxis (PrEP) to patients at risk for HIV when clinically indicated.
    - Regulations requiring separate consent for HIV testing, which contribute to stigma around HIV, should be reevaluated.
- Routine HCV screening of high-risk patient populations (eg, patients with a history of injection drug use or HIV) and one-time HCV screening for all adults is encouraged when feasible.

- Patients with a bloodborne infection have the right to confidentiality and privacy. However, ED health care workers should be allowed, without risk of liability, to exercise their professional discretion to confidentially inform an identified and unsuspecting third party at risk for infection from the index patient in accordance with established protocols from local health departments.
- All victims of sexual assault should be offered rapid HIV, HBV, and HCV testing; post-exposure prophylaxis (PEP) when clinically indicated; and appropriate follow-up.

ED Health Care Workers

- ED health care workers should adhere to standard precautions and other established infection prevention practices when providing patient care to prevent the transmission of bloodborne pathogens.
- As an effective vaccine exists to protect against HBV, all unvaccinated ED health care workers and those who cannot provide documentation of previous HBV vaccination should receive the complete HBV vaccine series unless medically contraindicated, and should subsequently be tested for immunity (ie, anti-HBs ≥10 mIU/mL).
- ED health care workers with documentation of previous HBV vaccination but no documentation of immunity might undergo testing for immunity upon hire.
- ED health care workers who have been exposed to potentially infectious patient blood or body fluids should have access to immediate medical care, including counseling, PEP (when clinically indicated), and follow-up care. Rapid testing of the source patient for HIV, HBV, and HCV infection with or without their consent is encouraged to guide timely decision making.
- ED physicians infected with a bloodborne pathogen as a result of an occupational exposure are encouraged to seek expert ongoing care and advice regarding their disease and its relation to their practice of emergency medicine. Those who are unable to perform their professional duties as a consequence of their disease are considered disabled under the Americans with Disabilities Act (ADA).

ED Health Care Workers with a Pre-Existing History of a Chronic Bloodborne Infection

- Mandatory HIV, HBV, and HCV testing should not be a condition of employment for ED health care workers.
- ED health care workers have an ethical obligation to know their status with respect to HIV, HBV, and HCV, particularly if their scope of practice includes exposure-prone procedures (eg, emergency thoracotomy).
- ED health care workers should not be required to disclose their HIV, HBV, or HCV status to employers unless their job performance is impacted.
- ED health care workers with a chronic bloodborne infection should not be:
  - Precluded from performing services based on their positive status alone
  - Required to inform patients of their positive status unless a patient is at risk because of exposure to the health care worker's blood or body fluids
  - Required to obtain informed consent before the delivery of services
- ED health care workers with a chronic bloodborne infection are encouraged to seek ongoing expert care regarding their disease. Those with high HIV, HBV, or HCV viral burden should review established recommendations on caring for patients from the Centers for Disease Control and Prevention (CDC), Society for Healthcare Epidemiology of America (SHEA), and other professional organizations.
- Decisions to restrict the practice of ED health care workers with a chronic bloodborne infection should be individualized and based on consistent, objective performance standards for competence, ability to perform routine duties, and compliance with established recommendations from the CDC, SHEA, and other professional organizations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Boarding of Admitted and Intensive Care Patients in the Emergency Department

Revised February 2023, June 2017, April 2011, April 2008, January 2007.

Originally approved October 2000

Optimal utilization of the emergency department (ED) includes the timely evaluation, management, and stabilization of all patients. Once admitted, patient care is most effectively and safely delivered on inpatient units. Boarding of admitted patients in the ED represents a hospital-wide failure and contributes to lower quality of care, decreased patient safety, reduced timeliness of care, reduced patient satisfaction, an increased number of patients leaving without being seen, and increased mortality. Additionally, it directly contributes to ED crowding due to the resultant loss of bed and resource capacity. ED crowding and its negative impacts on patients are due to misaligned health care economics and financial pressures on hospitals. As ED boarding is a hospital-wide problem, ED leadership, hospital administrators, EMS directors, community leaders, state and federal officials, hospital regulators and accrediting bodies must work together to find solutions to this problem. In order for the ED to continue to provide accessible and high quality patient care, the American College of Emergency Physicians (ACEP) believes that:

- Hospitals bear the responsibility of ensuring the prompt transfer of admitted patients to inpatient units as soon as the disposition decision by the treating emergency physician has been made. Additionally, in the event of ED boarding, hospitals must have established over-capacity contingency plans in place.

- ED patient boarding leads to quality and patient safety issues as well as impacts physician and staff wellness and retention. If transfer of admitted patients to inpatient units is delayed, the hospital must provide the supplemental nursing staff necessary to care for the patients boarded in the ED.

- Admitted patients should receive the same level and quality of care regardless of location. The admitting physician (or designee) is responsible for ongoing care of the patient after accepting responsibility for the patient's care whether verbally, by policy, or by writing admission

orders, regardless of the patient's physical location within the hospital. The emergency physician will always be available to respond to crisis for patients physically boarding in the ED in coordination with the admitting physician.

- In the event that the number of patients needing evaluation or treatment in an ED is equal to or exceeds the ED's treatment space capacity, admitted patients should be promptly distributed to inpatient units regardless of inpatient bed availability, for example, to inpatient hallways.

- Hospitals should have staffing plans in place that can mobilize sufficient health care and support personnel to meet increased patient needs.

- Hospitals should develop appropriate mechanisms to facilitate availability of inpatient beds, nursing staff, and support personnel to meet the increased patient needs in the event of ED boarding.

- Emergency physicians and emergency medicine leadership should be involved in the hospital-wide efforts aimed at monitoring and improving inpatient resource utilization.

- Nurse staffing patterns applicable to other specialized areas/units of the hospital should apply equally to the boarded ED patients to assure that there is a consistent standard of care within the organization. These staffing patterns must not degrade the ability of the ED staff to provide emergency care and must be consistent with established guidelines.

- Hospital diversion, as a temporary solution to ED boarding, should only be instituted if internal resources have been exhausted and outside community facilities have resources available to meet the needs of diverted patients. Additionally, all mechanisms for diversion must be consistent with ACEP policy on ambulance diversion.

- Hospital regulatory and accrediting bodies should mandate standards for prompt transfer of admitted patients from the ED to inpatient units.

Hospitals should have established protocols and procedures related to the expeditious transfer of boarded patients to in-network facilities, outside hospitals, or alternative care settings with appropriate inpatient beds when none are available at the hospital of origin.

If psychiatric patients are boarded in the ED, either admitted for a psychiatric purpose or pending admission, the hospital must assure the same level of oversight and psychiatric care afforded to inpatient psychiatric patients.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Boarding of Pediatric Patients in the Emergency Department

Revised September 2018

Originally approved January 2012

The problem of boarding emergency department (ED) patients is multifactorial with causes that span the entire health care delivery system. Boarding is a major patient safety issue. To optimize patient care, it is critical to reduce the boarding of pediatric patients awaiting inpatient bed placement as well as the overall length of stay of patients treated and discharged. Eliminating or reducing boarding of admitted patients has multiple benefits including:

- Improved patient outcomes
- Improved patient and family experience of care
- Reduced treatment of ED patients in non-patient care areas such as ED hallways
- Reduced number of patients leaving prior to evaluation or completion of medical treatment
- Increased operational efficiency in the ED
- Improved ED capacity to manage surges in demand
- Enhanced job satisfaction for ED providers and staff
- Shorter hospital length-of-stay
- Lower costs for an episode of care

Approaches used to achieve these goals include:

- Creating departmental metric goals for the components of ED length of stay;
- Constructing an action plan to move the metrics from baseline to target;
- Identifying and addressing frequent obstacles to efficient care delivery both inside and outside of the ED; and
- Changing inefficient processes both within the ED and in inpatient capacity management.

Most EDs are running at or above perceived maximum capacity on a daily basis. Although ED personnel are well trained to respond to unexpected major disasters, many EDs simply do not have the resources to surge beyond their already overtaxed environment. Operations must be structured to maximize efficiency and mitigate prolonged ED stays.

Although there is no universally accepted gauge for process improvement success, the decline of the left without being seen (LWBS) rate has shown to be a positive indicator. As most pediatric emergencies present to general EDs, specific

tools that shorten pediatric length of stay within the greater milieu should be utilized. The American College of Emergency Physicians supports the definition and monitoring of the following metrics for pediatric patients for the purpose of creating and gauging operations for improvement:

- Door to bed
- Door to first provider
- ED arrival to ED departure for patients treated and discharged
- ED arrival to ED departure for patients treated and admitted
- Admit decision to ED departure for admitted patients

The American College of Emergency Physicians supports previously identified processes as safe and efficient methods to achieve a reduction in overall patient length of stay:

- Advanced triage protocols should be implemented with other proven strategies such as a provider in triage, utilization of medical scribing and/or dictation services within the Electronic Medical Record and nursing driven order sets.
- Immediate bedding.
- Quick registration.
- Bedside registration for secondary demographic information.
- Electronic patient tracking systems.
- Triaging pediatric patients with attention to physiologic identifiers of severity of illness, including history of poor color, decreased activity, underlying disease or chronic illness, and prematurity with complications, and upgrading triage category appropriately.
- Utilizing pulse oximetry in triage to identify hypoxia at triage in children with respiratory symptoms.
- "Fast track" of appropriate pediatric patients, which reduces length of stay without impact on outcome.
- Team approach to family-centered care.
- Activating a specific pediatric team within general EDs during peak hours.

Recognizing that a major contributor to boarding admitted pediatric patients in the ED is the delay in transfer of care and placement to inpatient units after the decision to admit, hospital and inpatient processes must be improved to speed transfer of admitted patients out of the ED. A number of high-impact solutions have been developed to achieve these goals.[1]

- Active bed management--A hospital bed director manages all inpatient beds to coordinate and match ED admissions.
- Coordination of elective surgeries--Elective surgery times should be matched to available inpatient beds by smoothing schedule to include all days of the week and distributing intensive procedures throughout the week.
- Early inpatient discharges--Effort to shift discharges earlier in the day with practices such as discharge lounges, dedicated discharge teams, and policy shifts to increase availability of inpatient beds
- Instituting a hospital-wide[2] full capacity protocol to facilitate the admission of pediatric patients from the ED including Inpatient hallway boarding; Prompt transfer of admitted patients out of the ED even if to an inpatient hallway markedly reduces time from decision to admit to leaving the ED and is preferred by patients and families
- Given boarding patients typically have their care handed off more often, utilizing a standardized handoff (such as IPASS) should be done to ensure a safe and quality driven transfer of care.

References

1. ACEP Task Force Report on Boarding; Emergency Department Crowding: High-Impact Solutions. April 2008.
2. ibid

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Care of Patients with Behavioral Health Emergencies and Suspected or Confirmed COVID-19

Originally approved April 2020

A joint policy statement of the American Association for Emergency Psychiatry, American College of Emergency Physicians, American Psychiatric Association, Coalition on Psychiatric Emergencies, Crisis Residential Association, and the Emergency Nurses Association

As with environmental disasters and other crisis events, pandemic may exceed people's usual coping skills and capacity which, in turn, may lead to problems with anxiety, depression, increased use of substances, as well as exacerbation of underlying psychiatric disorders. Factors including, but not limited to, social and physical isolation, uncertainty, fear, evolving facts, changes in how individuals access outpatient care and public health recommendations contribute to this stress. This impacts people with and without pre-existing psychiatric illnesses and can contribute to a number of challenges for our already taxed emergency and crisis healthcare system.

The most severely ill people with psychiatric illness have high rates of baseline medical comorbidity, reduced access to primary care medical resources, and may lack resources to participate in telehealth services. As a result, this group may have elevated vulnerability to COVID and have limitations in accessing services other than emergency and crisis settings.[1]

For care of the behavioral health patient with suspected or confirmed COVID-19:

1. Encourage preparedness by supporting education and training on the treatment of psychiatric disorders and best-practices for the care of the behavioral health patient.
2. Staff must have access to appropriate, adequate personal protective equipment (PPE).
3. Encourage the use of existing, available behavioral health crisis services to mitigate unnecessary visits to the emergency department for psychiatric emergencies or for diverting people from psychiatric hospitals whenever possible.
4. Support medical screening via telehealth/telephonic and clinical pre-admission screenings and assessments by qualified, licensed

professionals. Additionally, we advocate for expanded use of telehealth, including prescribing of controlled substances for opioid use disorder via telemedicine, for patient and provider safety in line with infectious disease recommendations (i.e. social distancing). Encourage novel use of telehealth in high-risk environments for diversion and mitigation of unnecessary ED visits.

5. Recognize that patients who present with psychiatric complaints may also have co-occurring medical disorders that should have proper medical evaluation. Use pre-existing, evidence-based recommendations and screening algorithms in order to perform appropriate and directed medical evaluations. Encourage providers to identify alternate methods and modalities to make those assessments in the current COVID environment.
6. Understand that people will present in acute psychiatric crisis who are at risk of, have symptoms consistent with or have tested positive for COVID-19, who will not meet medical admission criteria but will meet criteria for further psychiatric care. Mental health and substance use care, based on the needs of the individual, must remain available.
7. Discourage the use of restraints while keeping people in the least restrictive setting possible that corresponds to their condition or presenting symptoms.
8. Ensure that medical personnel are evaluating for signs of domestic violence in children, partners and spouses, the elderly, those with intellectual and developmental disabilities, and other vulnerable populations, as implementation of social distancing and home-based self-quarantine could increase those risks.
9. Encourage staff to formulate aftercare services that are based on existing resources and partnerships in the community.
10. Provide individuals at risk of suicide with local and national resources of people to talk to if they are feeling suicidal (local crisis call center number, National Suicide Prevention Lifeline, Trans LifeLine, The Trevor Project, and Crisis Text Line).
11. Encourage the creation and use of Psychiatric Advanced Directives by patients, wherever local jurisdictions permit, that will help provide treatment guidance for providers by patients before their symptoms worsens to the point of impairment in psychiatric medical decision making.
12. Encourage and promote self-care amongst those providing care to our patients and their families. Acknowledge that healthcare workers will be committed to assisting all shortages/vacancies during these times of crisis, and that it is just as important to maintain one's individual health and wellness for the overall stability of the patients and the care delivery system. In addition to using one's own internal coping skills and resources, staff should be made aware of all other local, state, and regional options for care.
13. Ensure that there is adequate funding, governmental, non-governmental and private, to support all activities noted above and ensure that all insurance agencies, public and private, provide appropriate and reasonable reimbursement for the care and treatment of patients with behavioral emergencies.

[1] Osborn, David P J. 2001. "The Poor Physical Health of People with Mental Illness." Western Journal of Medicine 175 (5): 329–32.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Caring for Transgender and Gender Diverse Patients in the Emergency Department

Originally approved June 2022

The American College of Emergency Physicians (ACEP) is committed to equitable, culturally competent, and knowledgeable treatment of transgender and gender diverse (TGD) patients receiving care in the emergency department (ED).

ACEP believes that:

- Gender-affirming care is supported by evidence and by the medical community. TGD patients should have access to comprehensive gender-affirming health care that is provided in a safe and inclusive clinical setting.
- Emergency physicians need to be knowledgeable and aware of the unique needs and best practices related to care of TGD patients of all ages in the ED. Emergency physicians, patients, and their support structure should engage in shared-decision making based on scientific evidence and best practices regarding appropriate medical care.
- EDs should foster and develop practices, policies, and accessible resources that provide a supportive and inclusive environment for TGD patients, including removing structural barriers to care.
- Hospitals should provide ongoing education, training, and resources to all emergency physicians and ED staff related to best practices and the care of TGD patients.
- Emergency physicians must be able to practice high quality, objective evidence-based emergency medical care without legislative, regulatory, or judicial interference in the physician-patient relationship.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Civil Commitment

Reaffirmed October 2023

Revised April 2017, June 2010 and March 1997

Reaffirmed October 2001

Originally approved June 1991

Emergency physicians are often called on to care for patients for whom involuntary commitment may be a consideration. Civil commitment, the term used to describe the only non-criminal process by which the law allows individuals to be detained and their freedom of movement restricted, is applied to persons who, because of psychiatric illness or another disease, pose a danger to themselves or others. The laws delineating and governing this process are state laws, but federal regulations and oversight may also apply.

Commitment involves an infringement of civil liberties and may create special concerns for emergency department personnel. When participating in commitment procedures, the emergency physician should consider the following:

- Aspects of the process of commitment, including relevant laws, regulations, institutional policies, documentation, and patient rights.
- Performing an appropriate history and physical examination with appropriate, relevant ancillary diagnostic procedures, and with attention not only to the psychiatric evaluation but also to the possibility of other causative underlying medical problems.
- The patient's right to confidentiality and privacy.

ACEP supports the use of written department guidelines or policies addressing the commitment of emergency patients. ACEP further recognizes the importance of psychiatric and other mental health care professionals in the evaluation of patients that may be in need of commitment, and strongly supports access for patients to appropriate mental health consultation.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Clinical Guidelines Affecting Emergency Medicine Practice

Revised February 2020, January 2014 with current title

Reaffirmed October 2007

Originally approved July 2001 titled "Voluntary Guidelines for Emergency Medicine Practice"

The American College of Emergency Physicians (ACEP) believes that emergency medicine should provide the highest quality of patient care and service based on current research and available resources. While clinical practice guidelines do not represent the standard of care and do not supersede individual clinician judgment, they are vital adjuncts to decision making. Guidelines emanating from organizations including insurance entities, governmental agencies, and other medical societies may affect emergency medicine patient care. Ideally, any guidelines directly applicable to emergency medicine practice should originate from emergency medicine physicians. However, when developed by an outside organization, guidelines related to the practice of emergency medicine should be developed with significant emergency physician collaboration and implemented with emergency physician oversight.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Clinical Pharmacist Services in the Emergency Department

Revised January 2021

Originally approved June 2015

The emergency department (ED) is a complex environment presenting unique challenges for medication selection, dosing, administration, and monitoring. In particular, caring for high-risk populations such as the critically ill, geriatric patients, pediatric patients, those with limited healthcare access, and those with multiple comorbidities often requires the use of high-risk medications and the need for time-sensitive medication decisions.

The American College of Emergency Physicians (ACEP) believes that pharmacists serve a critical role in ensuring efficient, safe, and effective medication use in the ED and advocates for health systems to support dedicated roles for pharmacists within the ED. The emergency medicine pharmacist should serve as a well-integrated member of the ED multidisciplinary team who actively participates in patient care decisions including resuscitations, transitions of care, and medication reconciliation to optimize pharmacotherapy for ED patients. The exact delivery method for these services can vary among institution depending on size, financial resources, presence of academic programs, and other factors, but ACEP believes institutions should work toward a goal of 24/7 ED pharmacist coverage.

ACEP encourages emergency medicine rotations for pharmacy residents and clinical research regarding pharmacist access in the ED.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

CME Burden

Revised January 2022

Originally approved
April 2016

Continuing medical education (CME) course work is increasingly being mandated for licensure, certification, and privileging by states, regulatory agencies, and hospitals. Some examples include CME for stroke center certification, trauma center certification, and sedation privileges among many others. The American College of Emergency Physicians (ACEP) believes that continuous board certification by the American Board of Emergency Medicine (ABEM) and the American Osteopathic Board of Emergency Medicine (AOBEM) demonstrates comprehensive training, skills, and current understanding in the practice of emergency medicine regardless of any additional CME mandated or obtained.

Emergency physicians practice in a variety of emergency department settings and care for patients with a wide range of conditions. The aforementioned educational courses have value; but by requiring a significant and increasing number of these CME courses, physicians may have reduced education time to remain current in other clinical areas more relevant to their practice in emergency medicine. Therefore, ACEP, in supporting high-quality, safe, and efficient emergency care for all patients, believes that CME requirements as a part of maintenance of board certification should be self-determined by the specialty organization and by practicing emergency physicians to reflect their practice environments. Peer-identified educational opportunities may also supplement an individual practitioner's CME choices. This will have a greater benefit than the imposition of general CME requirements.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Code of Ethics for Emergency Physicians

Revised October 2023, January 2017, June 2016, June 2008

Reaffirmed October 2001

Revised June 1997 with current title

Originally approved January 1991 titled "Ethics Manual"

Contents

III. A Compendium of ACEP Policy Statements on Ethical Issues
Revised 2024, 2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2001, 1999, 1997

I. PRINCIPLES OF ETHICS FOR EMERGENCY PHYSICIANS

The basic professional obligation of beneficent service to humanity is expressed in various physicians' oaths and codes of ethics. In addition to this general obligation, emergency physicians accept specific ethical obligations that arise out of the unique features of emergency medical practice. The principles listed below express fundamental moral responsibilities of emergency physicians.

1. Emergency physicians shall embrace patient welfare as their primary professional responsibility.
2. Emergency physicians shall respond promptly and expertly, without prejudice or partiality, to the need for emergency medical care.
3. Emergency physicians shall respect the rights and strive to promote the best interests of their patients, particularly the most vulnerable and those with impaired decision-making capacity.
4. Emergency physicians shall communicate truthfully with patients and secure their informed consent for treatment, unless the urgency of the patient's condition demands an immediate response or another established exception to obtaining informed consent applies.
5. Emergency physicians shall respect patient privacy and disclose confidential information only with consent of the patient or when required by an overriding duty such as the duty to protect others or to obey the law.
6. Emergency physicians shall deal fairly and honestly with colleagues and take appropriate action to protect patients from health care professionals who are impaired or incompetent, or who engage in fraud or deception.
7. Emergency physicians shall work cooperatively with others who care for, and about, emergency patients.
8. Emergency physicians shall engage in ongoing study to maintain the knowledge and skills necessary to provide high quality care for emergency patients.
9. Emergency physicians shall act as responsible stewards of the health care resources entrusted to them.
10. Emergency physicians shall support societal efforts to improve public health and safety, reduce the incidence of injury and illness, and secure equitable access to emergency and other basic health care for all.

II. ETHICS IN EMERGENCY MEDICINE: AN OVERVIEW

A. Ethical Foundations of Emergency Medicine

Although professional responsibilities have been a concern of physicians since antiquity, recent decades have seen dramatic growth of both professional and societal attention to moral issues in health care. This increased interest in biomedical ethics is a result of multiple factors, including technological advances, recognition of social inequities in medicine, easier patient access to medical information, efforts to provide health care to marginalized groups, and the persistently rising costs of health care. All these factors contribute to the significance, the complexity, and the urgency of moral questions in contemporary emergency medicine.

1. Moral pluralism

Emergency physicians can utilize a variety of sources for ethical guidance, including professional oaths and codes of ethics, cultural values, social norms embodied in the law, religious and philosophical moral traditions, clinical experience, practical reasoning skills, and professional role models. These sources claim moral authority, and together they can inspire physicians to lead rich and committed moral lives. Problems arise, however, when different sources of moral guidance come into conflict. Numerous attempts have been made to

propose and defend an overarching moral theory able to assess and prioritize moral claims from all their various sources. Lacking agreement on the primacy of any one of these theories, however, emergency physicians are left with multiple sources of moral guidance. The primary goal of bioethics is to help health care professionals and patients understand, interpret, and weigh competing moral values as they seek reasoned and defensible solutions to moral problems encountered in health care.

2. Moral challenges of emergency physicians

The unique setting and goals of emergency medicine give rise to a number of distinctive moral challenges, including the following:

a. Patients often arrive at the emergency department (ED) with acute illnesses or injuries that require immediate care. In these emergent situations, emergency physicians have little time to gather additional data, consult with others, or deliberate about alternative treatments. Instead, there is a presumption for quick action guided by established treatment protocols.
b. Patients in the ED often are unable to participate in decisions regarding their health care due to acute changes in their mental state. When patients lack decision-making capacity, emergency physicians cannot secure their informed consent to treatments.
c. Emergency physicians typically have had no prior therapeutic relationship with their patients in the ED. Patients often arrive in the ED unscheduled, in crisis, and sometimes against their will. Thus, emergency physicians cannot rely on earned trust or on prior knowledge of the patient's condition, values, or wishes regarding medical treatment. The patient's willingness to seek emergency care and to trust the physician is based on institutional and professional assurances rather than on an established personal relationship.
d. Emergency physicians typically practice in an institutional setting, the hospital ED, and in close working relationships with other physicians, nurses, emergency medical technicians, and other health care professionals. Thus, emergency physicians must understand and respect institutional regulations and inter-professional norms of conduct.
e. In the United States, emergency physicians have a unique social role and responsibility to assess and treat patients who have no other ready access to care.
f. Emergency physicians have a societal duty to render emergency aid outside their normal health care practice setting when they are able to provide an intervention that may save life or limb.
g. By virtue of their broad expertise and training, emergency physicians are expected to be a resource for the community in out-of-hospital care, epidemic care, disaster management, toxicology, cardiopulmonary resuscitation, public health, injury control, and related areas.

All of these special circumstances shape the moral dimensions of emergency medical practice.

3. Virtues in emergency medicine

As noted above, the ED is a unique practice environment with distinctive moral challenges. To respond appropriately to these moral challenges, emergency physicians need knowledge of moral concepts, principles, and reasoning skills. Of equal importance, however, are praiseworthy attitudes, character traits, and dispositions, identified in ethical theory as *virtues*. The virtuous person is motivated to act in accordance with his or her moral beliefs and ideals, and he or she serves as a role model for others. It is therefore helpful to identify and promote the moral virtues needed by emergency physicians. Fostering these virtues can be a kind of moral vaccination against the ethical pitfalls inherent in emergency medical practice. Two timeless virtues of Western thought have essential roles in emergency medicine today: *courage* and *justice*.

Courage is the ability to fulfill one's obligations despite personal risk or danger. The courageous physician advocates for patients against financial gatekeepers, demanding employers, interrogating police, inexperienced trainees, dismissive consultants, unconcerned families, and inquiring reporters, among others. Emergency physicians exhibit courage when they assume personal risk to provide steadfast care for all emergency patients, including those who are agitated, violent, infectious, and the like. Emergency physicians also exhibit courage when they speak out against conditions that compromise high quality patient care, including lack of PPE, inadequate nursing staffing, unreasonable expectations of patients seen per hour, and unreasonable expectations to admit patients.

Justice or fairness is the disposition to give each person what is due to him or her. Justice helps emergency physicians shepherd resources, make appropriate triage decisions, and employ therapeutic parsimony, refusing marginally beneficial care to some while guaranteeing a basic level of care for all others.

Additional significant virtues in the practice of emergency medicine are *vigilance*, *impartiality*, *trustworthiness*, and *resilience*.

Vigilance is perhaps the virtue most emblematic of emergency medicine. In no other specialty do physicians provide immediate assistance, at any time, for patients across the entire spectrum of medical conditions. Emergency physicians must be alert and prepared to meet unpredictable demands, despite the circadian disharmony that threatens personal wellness.

The virtuous emergency physician practices *impartiality* by giving emergency patients unconditional positive regard and treating them in an unbiased way. Impartiality is essential in emergency medicine, since ED patients can be impoverished, marginalized, or incapacitated, have limited health literacy, or hold value systems different from that of the physician. For example, emergency physicians must treat alleged perpetrators of violent crime with the same regard as victims. Emergency physicians must resist prejudice toward people of different races, creeds, customs, habits, and lifestyle preferences.

Another essential virtue of emergency physicians is *trustworthiness*. Because they are vulnerable, ED patients rely on emergency physicians to provide competent care for them, including truthful communication, respect for their treatment decisions and values, and protection of their personal health information. Emergency physician clinical investigators must also be trustworthy, so that patient-subjects can trust they will not be exploited for power, profit, or prestige.

Finally, emergency physicians require the virtue of *resilience* to remain composed, flexible, and competent in the midst of clinical chaos. A tired, overstressed ED staff needs elasticity, optimism, support, and cooperation to stave off cynicism, resignation, disillusionment, numbing and professional burnout.
Resilience enables emergency physicians to meet the challenges of difficult situations and to encourage others to do so also. Resilience enables recovery from change or misfortune. For example, it enables professionals to respond calmly to challenges from upset patients, bereft families, or dissatisfied coworkers. Resilient persons are hardy, curious, purposeful, and adaptable; they trust in their ability to influence the course of events. Maintaining flexibility and coping with the typical circadian disharmony of emergency medical care is difficult, making the virtue of resilience essential.

B. The Emergency Physician-Patient Relationship

The physician-patient relationship is the moral center of medicine and the defining element in clinical ethics. The unique nature of emergency medical practice and the diversity of ED patients pose special moral challenges, as noted above. This section will rely on a prominent principle-based approach to bioethical theory to identify and describe emergency physician duties of beneficence, nonmaleficence, respect for autonomy, and justice.

1. Beneficence

Physicians assume a fundamental duty to serve the best interests of their patients by treating or preventing disease or injury and by informing patients about their conditions. Emergency physicians respond promptly to acute illnesses and injuries in order to prevent or minimize pain and suffering, loss of function, and loss of life. In pursuing these goals, emergency physicians serve the principle of beneficence, that is, they act for the benefit of their patients.

Emergency physicians' duty to provide beneficent care requires that they report for their shifts when medically able and treat all patients who present to the ED, unless caring for a patient poses significant risks to their own health or safety. Hospitals and health systems should take the necessary steps to mitigate risks to emergency physicians, but the physician's duty to care persists even when risks cannot be entirely mitigated.

To secure the benefits of health care, patients disclose sensitive personal information to their physicians and allow physicians access to their bodies for examination and treatment. Patients retain a strong interest, however, in protecting personal information from unauthorized disclosure and in preventing unnecessary intrusions on their physical privacy. Emergency physicians also respect the principle of beneficence, therefore, by protecting the privacy of their patients and the confidentiality of patient information. Personal information may only be disclosed when such disclosure is necessary to carry out a stronger conflicting duty, such as a duty to protect an identifiable third party from serious harm or to comply with a just law.

Telehealth and telemedicine offer new opportunities to provide beneficent care for patients. In their use of these modalities, however, emergency physicians must continue to prioritize patient interests, provide quality care, enable patients to make informed treatment choices, protect the confidentiality of patient information, and ensure continuity of care.

2. Nonmaleficence

At least as fundamental as the duty to benefit patients is the corresponding duty to refrain from inflicting harm. This duty, called the duty of nonmaleficence, is central to maintaining the emergency physician's integrity and the patient's trust. In contemporary emergency medical care, the potential for significant patient benefit is often inescapably linked with the potential for significant complications, side effects, or other harms. Emergency physicians cannot, therefore, avoid inflicting harms, but they can respect the principle of nonmaleficence by not initiating treatments likely to cause more harm than benefit, and by seeking always to maximize the benefits of treatment and to minimize the risk of harm. In order to protect patients from avoidable harm, physicians who lack appropriate training and experience in emergency medicine should not misrepresent themselves as emergency physicians and should not practice without supervision in the ED or prehospital setting.

To achieve the beneficent goals of health care, and to minimize the harm of inappropriate behavior, laws, regulations, guidelines and institutional policies have established a variety of professional boundaries.

Widely recognized professional boundaries in health care include:

a. *Civility boundaries* that direct physicians to employ social conventions of respectful speech and action in their relationships with patients and colleagues;
b. *Personal boundaries* that require separation of personal and professional relationships, including prohibition of sexual contact between physicians and patients, and strict limits on treatment of physicians' family members;
c. *Commercial boundaries* that protect patient interests by limiting or prohibiting physician practices that create financial conflicts of interest;
d. *Inter-professional boundaries* that define the scope of practice or different health care disciplines and specify proper and improper interaction between professionals in different disciplines.

Egregious boundary violations, including commission of crimes of fraud and of moral turpitude, may be the subject of moral complaints and disciplinary action against ACEP members, including revocation of ACEP membership.

3. Respect for patient autonomy

Adult patients with decision-making capacity have a right to accept or refuse recommended health care, and physicians have a corresponding duty to respect their choices. This right is grounded in the moral principle of respect for patient autonomy and is recognized in the legal doctrine of informed consent. According to this doctrine, physicians must inform the patient with decision-making capacity about the nature of his or her medical condition, treatment alternatives, and their expected consequences, and then obtain the patient's voluntary consent to treatment.

These are, however, significant exceptions to the duty to obtain informed consent, as follows:

a. If a patient lacks decision-making capacity, emergency physicians should respect reasonable decisions about the patient's treatment made by an appropriate surrogate decision maker. Emergency physicians should be adept at the determination of decision-making capacity and the identification of appropriate surrogate decision makers.
b. Emergency physicians may treat without securing informed consent when immediate intervention is necessary to prevent death or serious harm to the patient. When the initiation of treatment can be delayed without serious harm, informed consent must be obtained. Even if all the information needed for an informed consent cannot be provided, emergency physicians should, to whatever extent time allows, inform the patient (or, if the patient lacks capacity, a surrogate) about the treatment they are providing.
c. Patients may, for personal or cultural reasons, ask that information be given to family members, caregivers, or friends and that these third parties be allowed to make treatment choices for the patient. Patients may, if they wish, waive their right to informed consent or delegate decision-making authority for their care to others.
d. The duty to obtain informed consent may be overridden when patient isolation or treatment is necessary to protect the public health or safety.
e. The duty to obtain informed consent also may be modified or waived in a limited number of emergency medicine research studies where obtaining consent is not feasible, provided that these studies satisfy the values described in this Code of Ethics as well as the

requirements of federal research regulations, including approval by appropriate review bodies.

To choose and act autonomously, patients need accurate information about their medical conditions and treatment options. Emergency physicians must therefore relay sufficient information to patients or their surrogate decision makers to enable them to make an informed choice among various diagnostic and treatment options. Emergency physicians, when speaking to patients and families, must not overstate their experience or abilities, or those of their colleagues or institution. They must not overstate the potential benefits or success rates of proposed treatments or research.

Significant moral issues may arise in the care of terminally ill patients. Emergency physicians should, for example, be willing to respect a terminally ill patient's wish to forgo life-prolonging treatment, as expressed in an advanced directive or by an authorized surrogate decision-maker. Emergency physicians should also honor portable medical orders, including Do Not Attempt Resuscitation (DNAR) orders and POLST orders. Emergency physicians should understand and facilitate institutional procedures for the determination of death by neurologic criteria and for the identification of organ donors.

4. Justice

In a broad sense, acting justly can be understood as acting with impartiality or fairness. In this sense, emergency physicians have a duty of justice to provide care to patients regardless of race, ethnicity, creed, gender, nationality, sexual orientation, or other irrelevant characteristics. In a more specific sense, justice refers to the equitable distribution of benefits and burdens within a community or society. In the United States, public policy has established a limited right of patients to receive evaluation and stabilizing treatment for emergency medical conditions in hospital EDs. This policy indirectly ascribes to emergency physicians a social responsibility to provide necessary emergency care to all patients, regardless of ability to pay. As noted in the Principles of Ethics for Emergency Physicians listed above, emergency physicians also have a duty in justice to act as responsible stewards of the health care resources entrusted to them. In making triage decisions, for example, emergency physicians allocate medical resources in order to maximize benefits without bias, minimize harm, and respect the rights of all patients.

C. The Emergency Physician's Relationships with Other Professionals

The practice of emergency medicine requires multidisciplinary cooperation and teamwork. Emergency physicians interact closely with a wide variety of other health care professionals, including emergency nurses, emergency medical technicians, and physicians from other specialties. General ethical principles governing these interactions include honesty, respect, appreciation of other professionals' perspectives and needs, and an overriding duty to provide beneficent patient care.

1. Relationships with other physicians

Emergency physicians must interact with other physicians to achieve their primary goal of benefitting patients. Channels of communication among physicians must remain open to optimize patient outcomes. Communication may, however, be delayed when a sick patient requires immediate and definitive intervention before discussion with other physicians can take place. When practical, emergency physicians should cooperate with the patient's primary care physician to provide continuity of care that satisfies the needs of the patient and minimizes

burdens to other health care professionals. Emergency physicians should support the development and implementation of systems that facilitate communication with primary care physicians, consultants, caregivers, and others involved in patient care.

On-call physicians, like emergency physicians, are morally obligated to provide timely and appropriate emergency medical care. Emergency physicians should strive to treat consultants fairly and to make care as efficient as possible. In choosing consultants, emergency physicians may be guided by primary care physicians, patients and institutional protocols. If multiple physicians work in the ED, each patient should have clearly identified physician who is responsible for his or her care. Transfer of this responsibility should be communicated clearly to the patient, family, caregivers, and staff and should be clearly documented in the patient's medical record. When a patient is discharged from the ED, there must be a clearly communicated transfer of responsibility to the admitting inpatient physician or follow-up outpatient physician.

Physicians with disabilities, injuries, or transmissible diseases such as HIV infection may practice emergency medicine if their conditions do not inhibit proper performance or constitute a threat of harm to patients or others.

The Principles of Ethics for Emergency Physicians also recognize a duty to take appropriate action to protect patients from health care professionals who are incompetent or impaired, or who engage in fraud or deception. Those actions may include reporting, peer review, measures to protect patients from substandard care, and mechanisms to assist physicians in addressing and overcoming deficiencies.
Corrective action may include internal discipline and remedial training. To provide adequate protection for patients, health care institutions should require appropriate remediation before the impaired physician returns to practice.

Whenever an emergency physician believes that a colleague or consulting physician is incompetent or impaired by drug use, alcohol, or psychiatric or medical conditions, he or she should first take necessary measures to protect patients from harm. He or she should also approach the colleague to communicate the concern and give the person an opportunity to seek assistance. If this does not promptly address the concern, he or she should report the impaired physician to the appropriate institutional and regulatory authorities. This should be done with discretion and sensitivity and with a clear intention to protect patients from harm and to help the impaired physician obtain treatment and progress toward recovery. Physicians who conscientiously fulfill this responsibility should be protected from adverse legal or financial consequences.

2. Relationships with nurses and other health care professionals

Although emergency physicians assume primary responsibility for patient care, emergency medicine is a team effort. For all of their patients, physicians must coordinate the efforts of nurses and other health care professionals. Emergency physicians and ED administrators should ensure that patients are aware of the license level and scope of practice of each clinician who is participating in their care. To make the most effective use of the specific skills and expertise of the various professionals practicing in EDs, all should participate in the design and implementation of ED care systems and protocols.

In the out-of-hospital setting, emergency medical technicians of all levels rely on and rightfully expect the cooperation and guidance of the emergency physicians with whom they work. Base-

station command physicians and other emergency care professionals should strive to work harmoniously with prehospital personnel to optimize care for the patient. Patient-centered, nonjudgmental, open communication is an essential part of ethical medical command. Hospital and prehospital professionals must respect patient confidentiality and the dignity of all personnel involved.

While emergency physicians may have greater expertise in scientific and technical matters, they share responsibility with other health care professionals for making and carrying out moral choices. Physicians should therefore encourage involvement of other health care professionals when difficult moral issues arise.

3. Relationships with business and administration

Emergency physicians should advocate for emergency medical care as a fundamental right. Cooperation with experts in the management and administration of health care systems is essential for provision of efficient and cost-effective care, so that resources are available to provide care when it is needed. A central responsibility of physicians is to keep patient interests paramount in administrative and business decisions. The ability of emergency physicians to fulfill their fundamental responsibility to provide beneficial medical care for their patients depends, in turn, on basic societal responsibilities to establish and support an effective health care system.

Incentives from businesses, including for-profit and not-for-profit health care organizations and biomedical drug and equipment manufacturers, should not influence patient-centered clinical judgment. Gatekeeping activities that threaten patient safety are unethical, as are "gag clauses" in employment contracts that prevent physicians from informing patients about reasonable treatment alternatives. Physicians should not accept inappropriate gifts or other items from pharmaceutical, medical device, medical equipment, or biotechnology companies or their representatives.

Contractual relationships between emergency physicians and physician practice groups should be fair to all parties involved. Emergency medicine business practices must be transparently ethical, and emergency physician compensation should take into account both clinical and administrative services they provide. Disagreements arising from contractual arrangements should be arbitrated appropriately using a due process approach, whenever possible.

4. Relationships with students, trainees, and other learners

Emergency physicians practicing in academic settings have substantive moral responsibilities to medical students, trainees, out-of-hospital care personnel, and learners of all types. Learners depend on their clinical supervisors and professors to teach them both the moral and technical aspects of emergency medical practice. Practicing emergency physicians should serve as role models for ethical behavior in their relationships with patients, students, residents, fellows, and other health care professionals. In addition to positive duties to teach, supervise, and evaluate their trainees, academic physicians have negative duties to refrain from mistreatment, abuse, or coercion of those trainees.

Performance evaluations and letters of recommendation require careful, honest, and unbiased assessment of learners' strengths and weaknesses. In addition to mastering emergency medicine's essential skills and knowledge, emergency medicine residents and fellows should

strive to understand and embrace their moral duties to patients, the profession, and society. Patient interests should not be compromised in the education process.

5. Relationships with the legal system as an expert witness

Expert witnesses are called on to assess the appropriateness of care provided by emergency physicians in matters of alleged medical malpractice and peer review. To assure that unbiased expert witness testimony is available to courts and panels that determine the applicable standard of care, emergency physicians with sufficient expertise should be encouraged to testify in these venues. Emergency physician expert witnesses should, at a minimum, be certified in emergency medicine by the American Board of Emergency Medicine (ABEM), the American Osteopathic Board of Emergency Medicine (AOBEM), or, in pediatric emergency medicine, by the American Board of Pediatrics (ABP), and who have been actively practicing clinical emergency medicine for at least three years prior to the date of the incident under review.

As an expert witness, the physician has a clear ethical responsibility to be objective, truthful, and impartial, evaluating cases on the basis of generally accepted practice standards. It is unethical to overstate one's opinions or credentials, to misrepresent maloccurence as malpractice, to provide false testimony, or to invoke professional society memberships as prima facie evidence of expertise.

While reasonable compensation for a physician's time is ethically acceptable, physicians should not provide expert testimony solely for financial gain lest this unduly influence their testimony.

6. Relationships with the research community

Emergency physician investigators should abide by basic moral and legal principles contained in federal, institutional, and professional guidelines that govern research on human and animal subjects. Basic ethical requirements for research studies include appropriate study goals, a scientifically valid design, appropriate informed consent, confidentiality of records, and minimization of risks to subjects. Approval from appropriate institutional review boards is required, but it remains the responsibility of the investigator to protect the rights and welfare of patient-subjects. Federal regulations allow institutional review boards to grant a limited waiver of informed consent in specific emergency medicine research studies, where multiple other protections for patient-subjects are provided. It is imperative that data be collected carefully, interpreted correctly, and reported accurately; research misconduct and fraud are grounds for disciplinary action and loss of funding. Emergency physician investigators should follow responsible authorship practices; for example, all co-authors should actively participate in the study, including literature review, study design, data collection, data analysis, and manuscript preparation.

D. The Emergency Physician's Relationships with Society

1. The emergency physician and society

Emergency physicians owe duties not only to their patients, but also to the society in which they reside and practice. Though the emergency physician's duty to the patient is primary, it is not absolute. Emergency physician duties to the general public inform decision-making on a daily basis; for example, emergency physicians have duties to allocate resources justly, oppose violence, and promote public health that sometimes transcend duties to individual patients.

Emergency physicians should be active in legislative, regulatory, institutional, and educational pursuits that promote patient safety and quality emergency care.

2. Resource allocation and health care access: problems of justice

Both society and individual emergency physicians confront questions of justice in deciding how to distribute the benefits of health care and the burdens of financing that care among the various members of society. Emergency physicians routinely address these issues when they assign order of priority for treatment and choose appropriate diagnostic and treatment resources. In making these judgments, emergency physicians must attempt to reconcile the goals of equitable access to health care and just allocation of health care with the availability of resources and the need for cost containment.

3. Central tenets of the emergency physician's relationship with society

a. Access to emergency medical care is a fundamental right

As noted above, US public policy, as articulated in the federal Emergency Medical Treatment and Labor Act (EMTALA), has established access to emergency treatment as an individual right of all who seek and require it. Recognizing that emergency care makes a substantial contribution to personal well-being, emergency physicians endorse this right and support universal access to emergency care. Emergency physicians should not deny or delay emergency care on the basis of race, religion, sexual orientation, gender identity, ethnic background, social status, or ability to pay. Emergency physicians should act as advocates for the health needs of impoverished or marginalized patients, assisting them in finding appropriate care. This advocacy should include support for patient access to care for what a prudent layperson would reasonably perceive as an emergency medical condition. Society should support its establishment of a right to emergency care by providing adequate funding for all who need it.

When ED crowding limits access to care, morally defensible triage criteria should be used to determine priority for treatment.

Prehospital care is an essential societal good that emergency physicians, in conjunction with government, industry, health systems, and insurers must continue to make available to all members of society. Emergency medical technicians or paramedics should provide timely assessment of out-of-hospital patients. Decisions concerning transport to a medical facility should be made on the basis of medical need, patient preference, and the capacity of the facility to deal with medical problems.

b. Adequate inpatient and outpatient resources must be available to protect emergency patient interests

Patients requiring hospitalization for further care should not be denied access to an appropriate medical facility on the basis of financial considerations. Transfer to an appropriate accepting medical facility for financial reasons may be effected if a) the patient provides consent and b) there is no undue risk to the patient. Admission or transfer decisions should be made on the basis of the patient's best interest.

It is unethical for an emergency physician to participate in the transfer of an emergency patient to another medical facility unless the medical benefits reasonably expected from the

provision of appropriate medical treatment at the receiving medical facility outweigh the risks of the transfer or unless a competent patient, or a legally responsible person acting on the patient's behalf, gives informed consent for the transfer. Emergency physicians should be knowledgeable about applicable federal and state laws regarding the transfer of patients between health care facilities.

Although emergency physicians bear primary responsibility for the care and disposition of their patients, on-call consultants should share equitably in the care of ED patients, including impoverished and/or marginalized patients. This may include an on-site evaluation by the consultant if requested by the emergency physician.

For patients who do not require immediate hospitalization but need medical follow-up, adequate outpatient medical resources should be available both to continue proper treatment of the patient's medical condition and to prevent the development of subsequent foreseeable emergencies resulting from the original medical problem.

c. Emergency physicians should promote prudent resource stewardship without compromising quality

Emergency physicians have an obligation to ensure that quality care is provided to all ED patients. Participation in quality assurance activities and peer review are important for assuring that patterns of inadequate care are detected and remedied. Participation in continuing education activities, including the development of scientifically-based practice guidelines, assists emergency physicians in providing quality care.

Emergency physicians should employ health care resources, including new technologies, on the basis of individual patient’s medical and psychosocial needs and the appropriateness of the therapy as documented by medical literature. Diagnostic and therapeutic decisions should be made on the basis of potential risks and benefits of alternative treatments, including no treatment. Emergency physicians have an obligation to diagnose and treat patients in a cost-effective manner and must be knowledgeable about cost-effective strategies; but they should not allow cost containment to impede proper medical treatment of the patient.

The allocation of public resources to and within health care is necessarily a societal decision. In light of resource limitations and the lack or societal consensus on allocation issues, however, emergency physicians have dual obligations to honor patients' best medical interests and to serve as prudent stewards of health care resources.

d. Emergency physicians should respond to out-of-hospital emergencies and disasters.

Because of their unique expertise, emergency physicians have an ethical duty to respond to emergencies in the community if needed. This responsibility is buttressed by applicable Good Samaritan statutes that protect health care professionals from legal liability for good-faith efforts to render emergency medical treatment.

In a situation where the resources of a health care facility are overwhelmed by epidemic illness, mass casualties, or the victims of a natural or manmade disaster, the prudent emergency physician must make important triage decisions to benefit the greatest number of potential survivors. When the numbers of patients and severity of their injuries overpower existing resources, triage decisions should classify patients according to both

their need and their likelihood of survival. These triage decisions ideally should not be made by the same physician who would also be caring for the patient. The overriding principle should be to focus health care resources on those patients most likely to benefit and who have a reasonable probability of survival. Those patients with fatal injuries and those with minor injuries should be made as comfortable as possible while they await further medical assistance and treatment.

e. Emergency physicians should oppose violence.

Serving as a societal resource, emergency physicians have obligations to protect themselves, staff, and patients from violence and to teach EMS personnel under their supervision to do likewise. Hospitals have a duty to provide adequate numbers of trained security personnel to assure a safe environment. Ensuring safety may mean that patients who present a high risk of violence will lose some autonomy if they need to be restrained physically or chemically. Emergency physicians should ensure that restraints or medication are not used for punitive or vindictive reasons. Restraints are indicated only when there is a reasonable possibility that patients will harm themselves or others. The need for restraint of ED patients should frequently be reevaluated.

The emergency physician has an ethical duty to diagnose, treat, and properly refer suspected victims of abuse and neglect, including domestic partners, minors, and dependent adults, and to report domestic violence to appropriate authorities as required or permitted by law.

f. Emergency physicians should promote public health.

Emergency physicians advocate for public health in many ways, including the provision of basic health care for many uninsured patients. As a safety net both for patients who lack other resources of care and for victims of disaster, EDs provide needed care and assistance to many of the most vulnerable members of society. In times of disaster, pandemic, and other public health emergencies, EDs serve as the frontline against a constellation of medical and social ills.

Emergency physicians have first-hand knowledge of the grave harms caused by firearms, motor vehicles, alcohol, and other causes of preventable illness and injury. Inspired by this knowledge, emergency physicians should participate in efforts to advocate for and educate others about the potential of well-designed laws, programs, and policies to improve the overall health and safety of the public.

E. CONCLUSION

Serving patients effectively requires both scientific and technical competence, knowledge of what can be done, and moral competence, knowledge of what should be done. The technical emphasis of emergency medicine must be accompanied by a corresponding emphasis on character and careful moral reasoning, as emergency physicians increasingly confront difficult moral questions in clinical practice.

In the face of future uncertainties and challenges, ethics will remain central to the clinical practice of quality emergency medicine. Both technical and moral expertise can and should be nurtured through advanced preparation and training. The time and information constraints inherent in emergency practice make reflection on fundamental ethical principles and values challenging. This

Code is offered both for thoughtful consideration and as a resource when issues arise in clinical practice. The principles of emergency medical ethics identified herein may serve as a guide for practitioners and trainees. Through the process of moral reflection and deliberation, emergency physicians can make difficult and time-sensitive decisions based on a sound moral framework that respects and benefits patients, professionals, and society.

III. A COMPENDIUM OF ACEP POLICY STATEMENTS ON ETHICAL ISSUES

The policy statements listed in the Compendium section of the table of contents of this policy are available on ACEP's web site (http://www.acep.org).

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Collective Bargaining, Work Stoppages, and Slowdowns

Revised October 2020

Reaffirmed April 2014, October 2008

Revised April 2002 with current title," replacing "Guidelines Concerning Work Stoppages and Slowdowns" (March 1997) and "Collective Bargaining" (October 2000)

Revised March 1997

Reaffirmed April 1992

Revised titled "Guidelines Concerning Work Stoppages and Slowdowns" October 1984

Originally approved titled "Position Paper Concerning Work Stoppages and Slowdowns by Physicians" September 1977

The American College of Emergency Physicians (ACEP) recognizes that situations may arise in which groups of individuals choose to withhold services, thereby affecting health care delivery. ACEP believes that emergency physicians **s**hould work for the continuous availability of emergency medical care if a work stoppage occur**s**.

ACEP believes emergency physicians functioning as employees may participate in collective bargaining units. Such units should only include physicians, as non-physicians may follow other ethical codes. Non- employee physicians may participate in collective bargaining units to the extent allowed by law.

Medical professionals who choose to use a work stoppage or collective bargaining should avoid using collective action that could delay or deny access to emergency care.

ACEP members should anticipate problems that may arise from a work stoppage or other collective bargaining activities by any health care personnel and seek cooperation of other health professionals to ensure the timely provision of emergency medical care under all conditions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

*College Board Member and Officer Expert Testimony**

Reaffirmed January 2021, June 2015, October 2009

Revised February 2003

Originally approved September 2002 titled "Board Member and Council Officer Expert Testimony"

Board members and Council officers of the American College of Emergency Physicians (ACEP) shall not provide expert testimony in professional liability litigation during his or her term in office. Leadership positions in ACEP will not be used as prima-facie evidence of expertise in emergency medicine. Alleged violations of this policy will be addressed through the "Procedures for Addressing Charges of Ethical Violations and Other Misconduct."

Nothing in this policy shall prohibit the Board of Directors as a whole from directing the College to provide support to a member. In addition, ACEP presidents may authorize *amicus briefs* that clarify disputed facts or provide the emergency medicine perspective on behalf of ACEP members in professional liability litigation.

A Board member or Council officer who is involved in litigation as an expert witness at the time of adoption of this policy or upon his or her election and who wishes to continue in that role shall present the reasons to the Board for continuing to serve as an expert witness. The Board will determine by a simple majority vote whether the reasons provided justify the granting of an exception to this policy.

* ACEP, based on pronouncements by the US Supreme Court, is at risk of incurring liability as an entity whenever an individual causes injury or damage while even only appearing to be representing the College. The Supreme Court has imposed "strict liability" upon nonprofit membership organizations, such as the College, under this "apparent authority" principle even when the organization did not authorize the individual's conduct, did not benefit from it, and indeed did not even know about it.

It behooves the College to assure that its individual Board members and Council officers not be regarded as representatives of the College in presenting expert testimony in professional liability litigation, lest any untoward liability ramifications of that testimony redound to the College.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Commercial Filming of Patients in the Emergency Department

Reaffirmed January 2021

Revised June 2015 with current title, February 2009

Originally approved February 2002 titled "Filming in the Emergency Department"

The American College of Emergency Physicians (ACEP) believes that the commercial filming of patients or staff may be done only if patients and staff give fully informed consent prior to filming.

Because commercial filming cannot benefit a patient medically and may compromise both their privacy and confidentiality, filming should not commence unless and until a patient with full unencumbered decision making capacity can explicitly consent or, if institutional policies permit surrogate consent for commercial filming, that consent is given. Patients who do consent should have the right to rescind their consent up until a reasonable time before broadcast to the public.

Hospitals should develop and implement policies to regulate commercial filming that are approved by hospital governing bodies. Policies for filming should be approved by hospital ethics committees (or their representatives), which should ideally include physicians and community members. Departmental leaders should also be required to approve requests for such activities.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Compensated Time for Faculty Academic Administration and Teaching Involvement

Originally approved June 2019

A joint policy statement of the American College of Emergency Physicians, American Academy of Emergency Medicine, American Academy of Emergency Medicine Resident and Student Association, American Board of Emergency Medicine, American College of Osteopathic Emergency Physicians Graduate Medical Education Committee, American Osteopathic Board of Emergency Medicine, Association of Academic Chairs of Emergency Medicine, Council of Emergency Medicine Residency Directors, Emergency Medicine Residents' Association, Society for Academic Emergency Medicine, and the Society for Academic Emergency Medicine Resident and Medical Students

Emergency medicine is unique in that it provides 24-hour clinical care for a diverse range of high-acuity, life-threatening illnesses and requires direct, continuous, on-site faculty supervision of residents. Because a substantial portion of residency education consequently occurs outside the domain of regular clinical shifts, protection of core faculty educational time is essential. Core faculty have been defined as those faculty who work clinically and devote the majority of their professional efforts to emergency medicine graduate medical education (GME).[1] Program leadership and core faculty are critical to the success of the training missions of emergency medicine residency and fellowship programs. Core faculty require compensated time to engage in necessary residency education, administration, and scholarly activities outside of the clinical environment; without protected time for core faculty to accomplish this, the quality of emergency medicine residency training and clinical care may decline. At a minimum, all emergency medicine core faculty should be allocated protected time per the 2017 Accreditation Council for Graduate Medical Education (ACGME) Emergency Medicine Common Program Requirements: emergency medicine core faculty clinical hours should be limited to no more than 28 hours per week or 1344 hours per year, whichever is fewer.[1]

1. Program Requirements for GME in Emergency Medicine – ACGME [Internet]. Program Requirements for GME in Emergency Medicine – ACGME. 2017 [cited 2019 Feb 27];Available from: https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/110_emergency_medicine_2017-07-01.pdf

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Compensation Arrangements for Emergency Physicians

Revised April 2021, April 2015, April 2002, June 1997

Reaffirmed October 2008, April 1992

Originally approved June 1988

The American College of Emergency Physicians (ACEP) supports the following general principles for compensation arrangements for emergency physicians.

- ACEP recognizes that emergency physicians practice under a variety of compensation arrangements, eg, independent contractor, fee for service, salary, hourly compensation, percentage of gross or net billing, or a combination of these.

- ACEP recognizes that quality emergency medical care is provided by physicians under different methods of compensation. Specific arrangements may also include performance incentives based on measures such as productivity, patient experience[1], and other measurable variables.

- ACEP recommends that emergency physicians receive timely feedback on any performance-based measures used to determine compensation.

- Regardless of the compensation method or practice arrangement, emergency physicians are entitled to fair and equitable compensation, taking into account their experience, clinical and administrative services provided, added value to the practice, market conditions, and other appropriate circumstances or factors.

- Emergency physicians are entitled to and should be provided detailed itemized reports of all billings and collections in their name on at least a semi-annual basis regardless of whether or not billing and collection is assigned to another entity within the limits of state and federal law and have the right to audit such billings, at any time without retribution. The emergency physician shall not be asked to waive access to this information.

- Emergency physicians should understand their employment agreements and should consider obtaining review by legal counsel prior to signing a contract.

- ACEP strongly urges each emergency physician to carefully evaluate and understand the health care delivery system such that they are engaging in a suitable compensation arrangement.

- ACEP strongly urges transparency in disclosure of both the revenue and expenses associated with an emergency medicine practice, including administration and management services, so that each emergency physician can make an informed decision in determining what is a fair compensation package for them.

[1] American College of Emergency Physicians. Patient Experience of Care Surveys (policy statement). Approved by the Board June 2016.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Confidentiality of Patient Information

Revised February 2023, January 2017 with current title

Reaffirmed October 2008, October 2002, October 1998

Originally approved January 1994 titled "Patient Confidentiality"

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "From Hippocrates to HIPAA: Privacy and Confidentiality in Emergency Medicine - Parts I and II"

The American College of Emergency Physicians (ACEP) believes that all physicians have a moral and legal responsibility to protect the confidentiality of their patients' personal health information. Protecting confidentiality enhances trust in the therapeutic relationship, encourages patients to provide complete and accurate health information, and prevents the harms of disclosure of sensitive personal information to persons without an authorized need to know.

ACEP recognizes that respecting the confidentiality of patient information is a *prima facie*, but not an absolute obligation. In other words, physicians must refrain from disclosing confidential information without consent from the patient or surrogate unless more compelling considerations, including the prevention of substantial harm to other persons, permit or require disclosure of that information. In particular, many state laws require disclosure of specific information to law enforcement or public health authorities.

Emergency physicians may confront difficult decisions in responding to requests for patient information by law enforcement officers, by parents or guardians about their minor children, by public health officers, and by the media. Decisions in these and other complex circumstances require collection and assessment of information about clinical circumstances, patient wishes, state and federal laws, and the likely consequences of different courses of action.

Emergency physicians should be especially careful not to disclose confidential patient information when posting on social media and texting in non-HIPAA secure formats.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Conflict of Interest

Revised April 2023, January 2017, June 2011, June 2008

Reaffirmed October 2001

Revised September 1997

Originally approved January 1996

All Key Leaders (defined below) of the American College of Emergency Physicians (ACEP) and others acting on behalf of the College have a fiduciary duty to the College, including the duties of loyalty, diligence, and confidentiality. The following groups or individuals are defined as Key Leaders:

1. Officers
2. Board of Directors
3. Past Presidents, Past Speakers, Past Chairs of the Board
4. Councillors, Alternate Councillors
5. Committee Chairs and Members
6. Section and Task Force Chairs
7. Section and Task Force Members who participate in the development of policy and resources on behalf of the College
8. Editors of ACEP-sponsored publications (e.g., *Annals of Emergency Medicine*, *JACEP Open*, *ACEP Now*, various podcasts)
9. ACEP staff leadership, including its Executive Director, Chief Operating Officer, and members of the Senior Management Team

Those in positions of responsibility must act in utmost good faith on behalf of the College. In accepting their positions, they promise to give the College the benefit of their work and best judgment. They should exercise the powers conferred solely in the interest of the College and should not use their role or position for their own personal interest or that of any other organization or entity. Even the perception of conflict can potentially compromise the confidence and trust of College members and the public in the stewardship of its leaders.

Conflicts of interest arise when participants in positions of responsibility have personal, financial, business, or professional interests or responsibilities that may interfere with their duties on behalf of the College. The immediacy and seriousness of various conflicts of interest situations may vary. Of basic importance is the degree to which the interest would tend one toward bias or pre-disposition on an issue or otherwise compromise the interests of the College.

A conditional, qualified, or potential conflict of interest can arise when the outside interest is not substantial or does not relate significantly to any contemplated action of the College. For example, a person might hold a minor financial interest in a company wishing to do business with the College. Disclosure is ordinarily sufficient to deal with this type of potential conflict of interest, provided that there is no expectation that one's duty to the College would be affected.

Direct conflicts of interest arise, for example, when an individual engages in a personal transaction with the College or holds a material interest or position of responsibility in an organization involved in a specific transaction with the College or that may have interests at variance or in competition with the College. The appropriate and necessary course of action in such cases is to disclose the conflict and recuse oneself, during the deliberations and the vote on the issue.

In rare circumstances, an individual may have such a serious, ongoing, and irreconcilable conflict, where the relationship to an outside organization so seriously impedes one's ability to carry out the fiduciary responsibility to the College, that resignation from the position with the College or the conflicting entity is appropriate.

Dealing effectively with actual, perceived, or potential conflicts of interest is a shared responsibility of the individual and the organization. The individual and organizational roles and responsibilities with regard to conflicts of interest follow.

A. General

1. All individuals who serve in positions of responsibility within the College need not only to avoid conflicts of interest, but also to avoid the appearance of a conflict of interest. This responsibility pertains to Key Leaders and other elected or appointed leaders, and staff. Decisions on behalf of the College must be based solely on the interest of the College and its membership. Decisions must not be influenced by desire for personal profit, loyalty to other organizations, or other extraneous considerations.
2. Key Leaders shall annually sign a statement acknowledging their fiduciary responsibility to the College and agree to avoid conflicts of interest or the appearance of conflicts of interest. The issue of conflicts of interest with regard to the remainder of the staff shall be the responsibility of the Executive Director. The issue of adherence to this policy regarding conflicts of interest of Section and Task Force Members who participate in the development of policy and resources on behalf of the College shall be the responsibility of the Section and Task Force Chairs.
3. Key Leaders shall annually complete a form designated by the Board of Directors that includes the disclosure of pertinent financial and career-related information and shall update that information as necessary to continuously keep it current and active.
4. Key Leaders shall annually sign a statement acknowledging that they may have access to confidential information and agree to protect the confidentiality of that information.
5. Officers, Board Members, the Executive Director, Chief Operating Officer, and members of the Senior Management Team shall annually agree to clarify their position when speaking on their own behalf as opposed to speaking on behalf of the College, or as an Officer or member of the Board of Directors or members of the Senior Management Team.
6. Officers, Board Members, the Executive Director, the General Counsel, or their designees will periodically review the conflict of interest disclosure statements submitted to the College to be aware of potential conflicts that may arise with others.
7. When an Officer, Board Member, the Executive Director, or General Counsel believes that an individual has a conflict of interest that has not been properly recognized or resolved, the Officer, Board Member, Executive Director, or General Counsel will raise that issue and seek proper resolution.

8. Any member may raise the issue of conflict of interest by bringing it to the attention of the Board of Directors through the President or the Executive Director. The final resolution of any conflict of interest shall rest with the Board of Directors.

B. Disclosure Form
   1. Key Leaders shall acknowledge that their service to the College requires annual completion of a Conflict of Interest Disclosure Form related to certain affiliations and interests that discloses the following:
      a. Name of employer. Positions of employment, including the nature of the business of the employer, the position held, and a description of the daily employment.
      b. Positions of leadership in other organizations, chapters, commissions, groups, coalitions, agencies, and/or entities (eg, Board of Director positions, committees, and/or_spokesperson roles). Include a brief description of the nature and purposes of the organization or entity.
      c. Family members who are non-physicians, currently or formerly employed in an emergency department or urgent care center, providing care to patients, including, but not limited to nurse practitioners, physician assistants, or certified nurse specialists. Family members include a spouse, domestic partner, parent, child, sibling, grandparent, grandchild, sibling-in-law, child-in-law, parent-in-law, stepparent, stepchild, guardian, ward, or a member of the individual's household.
      d. Outside relationship with any person(s) or entity from which the College obtains goods and services, or which provides services that compete with the College where such relationship involves: a) holding a position of responsibility; b) an equity interest (other than a less than 1% interest in a publicity traded company; c) any gifts, favors, gratuities, lodging, dining, or entertainment valued at more than $100.
      e. Financial interests or positions of responsibility in any entity providing goods or services in support of the practice of emergency medicine (eg, physician practice management company, billing company, physician placement company, book publisher, medical supply company, malpractice insurance company), other than owning less than a 1% interest in a publicly traded company.
      f. Outside relationship with any health plan, health insurance company, delegated payer, health insurance company administrative service organization, or health insurance company related philanthropic organization or entity where such relationship involves: a) holding any position of responsibility; b) an equity interest (other than a less than 1% interest in a publicity traded company); c) any stipend, contribution, gift, gratuities, lodging, dining or entertainment valued at more than $100.
      g. Industry-sponsored research support within the preceding twenty-four (24) months.
      h. Speaking fees from non-academic entities during the preceding twenty-four (24) months.
      i. The receipt of any unusual gifts or favors from an outside entity or person, or the expectation that a future gift or favor will be received in return for a specific action, position, or viewpoint taken, in regard to the College or its products.
      j. Any other interest the Key Leader believes may create a conflict with the fiduciary duty to the membership of the College or that may create the appearance of a conflict of interest.
   2. Key Leaders shall acknowledge and agree to the following on the Conflict of Interest Disclosure Form:
      a. Fiduciary responsibility to the College to avoid conflict of interest or the appearance of conflict of interest.
      b. Access to confidential information and to protect the confidentiality of that information.
      c. Clarify position when speaking on own behalf as opposed to speaking on behalf of the College.
      d. To abide by the terms and requirements of the ACEP Conflict of Interest Policy.
      e. Recognize the obligation to notify the appropriate individual as required by the Conflict of Interest Policy should a possible conflict of interest arise in responsibilities to the College. To

abstain from participation in any business of the College that may be affected from such perceived or actual conflict of interest until it is determined whether or not a conflict exists and if so, how that conflict may be resolved. If any relevant changes occur that would be reasonably viewed as requiring disclosure, there is a continuing obligation to file an amended Conflict of Interest Disclosure Form.

3. Except as provided in Section 5 below, completed disclosure forms shall be submitted to the President and the Executive Director, or other designee(s), no later than thirty (30) days prior to commencement of the annual meeting of ACEP's Council. For Officers and Board Members newly elected during a meeting of ACEP's Council, the forms shall be submitted no later than thirty (30) days following their election if they were not previously submitted. Any Key Leader who has not submitted a completed disclosure form by the applicable deadline will be ineligible to participate in those specific College activities for which they have been appointed or elected until their completed disclosure forms have been received and reviewed as set forth in this policy.
4. Information disclosed by Officers, Board Members, and the Executive Director pursuant to this policy will be placed in the General Reference Notebook available at each Board meeting for review by Officers and Board Members. Committee, Section, and Task Force Chairs will have access to the disclosure forms of the members of the entity they chair. In addition, any College member may request a copy of a Key Leader's disclosure form upon written request to the ACEP President.
5. Completed disclosure forms required from Section and Task Force Members will be submitted to the relevant Section or Task Force staff liaison, or other designee(s), within thirty (30) days of appointment or assignment.
6. The College may provide to its members and the public the disclosure forms of its Key Leaders and anyone who speaks at the Council meeting.

C. Additional Rules of Conduct
   1. Prior to participating in any deliberation or vote on an issue in which they may have a conflict, Key Leaders shall disclose the existence of any actual or possible interest or concern of:
      a. The individual;
      b. A member of that individual's immediate family; or
      c. Any party, group, or organization to which the individual has allegiance that can cause the College to be legally or otherwise vulnerable to criticism, embarrassment, or litigation.
   2. After disclosure of the interest or concern that could result in a conflict of interest as defined in this policy and all material facts, the individual shall leave the Board, Committee, Section, or Task Force meeting while the determination of a conflict of interest is discussed and voted upon. The remaining Board, Committee, Section, or Task Force members shall decide by majority vote if a conflict of interest exists. If a conflict of interest is determined to exist, the individual having the conflict shall retire from the room in which the Board, Committee, Section, or Task Force is meeting and shall not participate in the deliberation or decision regarding the matter under consideration. However, that individual shall provide the Board, Committee, Section, or Task Force with any and all relevant information requested.
   3. The minutes of the Board, Committee, Section, or Task Force meeting shall contain:
      a. The name of the individual who disclosed or otherwise was found to have an interest or concern in connection with an actual or possible conflict of interest, the nature of the interest, any action taken to determine whether a conflict of interest was present, and the Board's, Committee's, Section's, or Task Force's decision as to whether a conflict of interest existed;
      b. The extent of such individual's participation in the relevant Board, Committee, Section, or Task Force meeting on matters related to the possible conflict of interest; and
      c. The names of the individuals who were present for discussion and votes relating to the action, policy, or arrangement in question, the content of the discussion including alternatives to the proposed action, policy, or arrangement, and a record of any votes taken in connection therewith.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Conflicts of Interest in Biomedical Research

Reaffirmed January 2021, June 2015

Revised April 2009 with current title

Originally approved June 2002 titled "Financial Conflicts of Interest in Biomedical Research"

Research is essential to enhancing emergency care for patients through new and improved diagnostic and therapeutic modalities. Various issues may present conflicts of interest in biomedical research, including financial interests, incentives, gifts, philanthropies, honoraria, opportunities, or other conflicts of interest. Such conflicts of interest may jeopardize investigators' basic responsibilities to protect patient safety and to maintain research integrity. To limit potential conflicts of interest in research and to protect and encourage the valuable endeavors of emergency medicine research, the American College of Emergency Physicians (ACEP) endorses the following guidelines:

1. Investigators must avoid conflicts of interest that have the potential to affect adversely the rights or welfare of patient subjects or to compromise the integrity, objectivity, or scientific value of their research.
2. Investigators should disclose any and all significant financial relationships that they or their immediate family members have with sponsors. Such relationships should be disclosed to the investigator's employing institution, to any institutional conflict of interest (COI) or institutional review board (IRB) that reviews the investigator's research proposal, to any audience to which the research is presented, to any journal to which the research is submitted for publication, and to potential research subjects as part of the informed consent process.
3. Investigators must not allow investments in, or financial reimbursement from, companies sponsoring their research to jeopardize rights of patient subjects, or compromise the integrity of the research results.
4. Financial compensation to investigators should be at fair market value for their efforts and expenses.
5. Investigators should establish agreements with industry sponsors in writing before initiating the investigation. Such agreements should clearly give researchers primary authority for data collection, analysis, writing, and reporting of the research. Investigators should retain academic freedom to publish both positive and negative results of the research.
6. If disagreements arise regarding the ethical conduct of research, guidance may be sought through local COI committees, IRBs, ethics committees, or established ACEP channels.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Considerations for Emergency Physicians in Pre-Retirement Years

Reaffirmed January 2021, June 2015

Originally approved June 2009

The American College of Emergency Physicians recognizes that an increasing percentage of its members are entering retirement or pre-retirement years. In an effort to enhance and prolong the careers of emergency physicians in the latter stages of their professional lives, to ensure patient safety, to promote continued membership and participation in the College, and to facilitate the transition of emergency physicians from active practice to semi- or full retirement, the following guidelines are offered:

- Physicians and physician groups are encouraged to be mindful of the limitations that may accompany the aging process. In compliance with age discrimination laws, appropriate policies to evaluate and, to the extent possible, accommodate specific limitations can provide the senior physician with a supportive environment in which to deliver quality care.

- As may be feasible or appropriate, a variety of workload modifications can be implemented:
  - Consider minimizing or eliminating assignments to rotating, late evening or night shifts as a means of minimizing circadian stress.
  - Encourage older providers to work more day shifts on weekends in exchange for night shift assignments.
  - Follow scientifically-based scheduling recommendations when possible. This may include consistently scheduling senior physicians to a single shift segment of the day/night cycle to preserve a period of core sleep, or scheduling clockwise rotations (morning, afternoon and night) to minimize circadian disruption.
  - Consider scheduling additional time off for recovery after night shifts.
  - When possible, shorten shifts to periods of eight to ten hours or less, and schedule fewer consecutive clinical shifts.
  - When possible, adopt scheduling strategies that best match patient volume and acuity to the work pace of the senior physician.
  - When possible, allow those senior physicians who are willing to exchange clinical responsibilities for administrative or teaching duties to obtain the requisite training to do so.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Corporal Punishment of Children

Revised June 2022, October 2016

Reaffirmed October 2007

Revised September 2001

Approved October 1993

Emergency physicians have the responsibility to care for and protect any child who seeks care in the emergency department. While effective disciplinary techniques are essential to healthy child development, research on corporal punishment has demonstrated deleterious short- and long-term impacts on most children.

ACEP strongly discourages the use of corporal punishment as a method of disciplining children and instead encourages the use of non-corporal corrective strategies.

ACEP encourages reporting corporal punishment actions of a severity that caused a child's significant injury to the appropriate child welfare and protective services as is already required by law in all states.

ACEP recommends parental education regarding the potential negative effects of corporal punishment and the benefits of using alternative techniques for discipline.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Corporate Practice of Medicine

Originally approved June 2023

The American College Emergency Physicians (ACEP) believes the physician-patient relationship is the moral center of medicine. The integrity of this relationship must never be compromised. The physician must have the ability to do what they believe in good faith is in the patient's best interest.

Medical decisions must be made by physicians, and any practice structure that threatens physician autonomy, the patient physician relationship, or the ability of the physician to place the needs of patients over profits should be opposed. Corporate practice of medicine prohibitions are intended to prevent non-physicians from interfering with or influencing the emergency physician's professional medical judgment.

The following clinical decisions that impact patient care should only be made by an emergency physician or a nurse practitioner/physician assistant under supervision in accordance with ACEP policy:

- Determining what diagnostic tests and treatment options are appropriate for a particular condition.
- Determining the need for referrals to, or consultation with, another physician/specialist.
- Responsibility for the ultimate management and disposition of the patient.

These decisions, if made by other individuals or entities, would constitute the unlicensed practice of medicine if performed by an unlicensed person.

In addition, the following business or management decisions that result in control over the emergency physician's practice of medicine should only be made by a physician. Under corporate practice of medicine prohibitions, these decisions made as part of the operations and management of an emergency medicine group practice must be made by a physician, physicians, or under the direction of a physician on behalf of the group practice, but not by each individual physician or by an unlicensed person or entity:

- Determining how many patients an emergency physician must see or supervise in a given period of time, how many hours an emergency physician must work, or how many hours of coverage are provided.

- Determining which patients will be seen by an emergency physician or a physician assistant/nurse practitioner or how such patients seen by a physician assistant/nurse practitioner shall be supervised by an emergency physician.
- Selection, hiring/firing (as it relates to clinical competency or proficiency) of emergency physicians, nurse practitioners, and physician assistants.
- Setting the parameters under which the practice will enter into contractual relationships with third-party payers.
- Oversight of policies and procedures for revenue cycle management, including coding and billing procedures, reimbursement from insurers, and collections for patient care services.

These types of decisions cannot be delegated to a non-physician, including non-physician staff in management service organizations. While a physician may consult with non-physicians in making the business or management decisions described above, the physician must retain the ultimate responsibility for, or approval of, those decisions.

Ownership of medical practices, operating structures, and models should be physician-led and free of corporate influence that impacts the physician-patient relationship.

The following types of medical practice ownership and operating structures would likewise constitute the prohibited corporate practice of medicine:

- Ownership of an emergency medicine practice or group by non-physician owners or by physicians who do not have responsibility for the management, leadership, and clinical care of the practice.
- Restricting access of emergency physicians to information and accountings of billings and collections in their name as described in ACEP's policy statement "Compensation Arrangements for Emergency Physicians."

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Coverage for Patient Home Medication While Under Observation Status

Reaffirmed January 2024

Originally approved
June 2018

The American College of Emergency Physicians (ACEP) supports the coverage of all administered medications for patients under observation status without having to apply for reimbursement. ACEP also supports a goal that patient out-of-pocket expenses for observation be no greater than the cost to the patient for inpatient services.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2020

COVID-19: Use of Donated or Self-Purchased Personal Protective Equipment (PPE)

Originally approved March 2020

Global penetrance of COVID-19 has placed significant stress on the ability to produce and supply appropriate PPE to health care workers. Additionally, the risk pool of known and unknown disease in our communities has greatly challenged our ability to reliably determine patients who are at low risk. For these reasons, ACEP has and will continue to support the use of surgical masks with proper eyewear and other protective equipment for physicians and other individuals caring for patients, regardless of their complaint. Processes and procedures that create higher risk, such as close contact and aerosolizing procedures, require full PPE, including N95s.

Because the inadequate PPE supply increases the risk to our physicians, they have taken to buying their own PPE or utilizing donations from other industries. ACEP urges hospitals and other health care facilities to allow physicians to use their donated or self-purchased PPE.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2019

Crowding

Revised April 2019,
February 2013

Originally approved
January 2006

Crowding occurs when the identified need for emergency services exceeds available resources for patient care in the emergency department (ED), hospital, or both.

The causes of crowding are multifactorial and span the entire health care delivery system. Research has shown continued growth in ED visits, which has outpaced population growth. Current trends show increasing patient acuity, requiring more complex evaluation and treatment plans that increase ED care delivery times as well as inpatient lengths of stay. The resultant strain on hospital inpatient bed capacity creates downstream pressure to board admitted patients* in the ED. These factors exacerbate crowding by utilizing limited ED resources including beds, nursing care, and access to support services such as radiology, laboratory and environmental services. Evidence has shown an increase in morbidity and mortality due to boarding.

Results of crowding include:

- Treatment of patients in areas not designated for treatment, such as hallways, resulting in a loss of privacy for patients and families.
- Treatment of boarded patients, including mental health and ICU patients, by ED nurses.
- Increased morbidity and mortality for both boarded and ED patients.
- Increased disability in older patients who are discharged to facilities rather than admitted.
- Increased length of stay for admitted patients.
- Decreased patient satisfaction for hospitalized and ED patients.
- Diminished ED staff satisfaction and employee engagement.
- Significant delay in evaluation and treatment of emergency patients.
- Patients leaving prior to completion of medical treatment.
- Increased ambulance diversion time.
- Increased stress for behavioral health patients due to a lack of facilities or privacy that are a necessary component of emergency psychiatric care.
- Increased costs for care delivery.
- Reputation damage for the entire institution.

It is the responsibility of hospital leadership and care providers to quantifiably measure, analyze, and address identifiable and recurrent causes of crowding (such as the predictable saturation of inpatient bed capacity and essential support

services) in order to prevent poor outcomes related to crowding. It is recommended that hospital leadership utilize a crowding assessment tool to consistently quantify saturation events and analyze data to identify specific mitigation actions that involve the entire hospital. It is imperative that local and national health care systems are active in addressing the more global and systemic causes of crowding, including hospital funding. Emergency medicine leadership should be actively involved in helping to identify successful solutions to crowding at both the local and national levels.

* A "boarded patient" is defined as a patient who remains in the emergency department after the patient has been admitted or placed into observation status at the facility but has not been transferred to an inpatient or observation unit.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Cultural Awareness and Emergency Care

Revised April 2021, April 2020

Reaffirmed April 2014

Revised April 2008

Originally approved October 2001

Emergency physicians routinely encounter patients from diverse cultural backgrounds representing various customs, practices or beliefs. Cultural awareness is the ability of physicians to understand and respond to the unique cultural needs brought by patients to the health care encounter. The physician should consider the patient's culture as it relates to the patient's history and presenting symptoms in recommending a treatment plan that is mutually agreed upon by the patient and physician.

The American College of Emergency Physicians believes that:

- Quality health care depends on the scientific competence of physicians as well as their cultural awareness.
- Cultural awareness should be an essential element in the training of physicians and to the provision of safe, quality care in the emergency department environment.
- Physicians should encourage patients and their representatives to communicate cultural issues that may impact their care.
- Resources should be made available to emergency departments and emergency physicians to assure they are able to respond to the needs of all patients regardless of their respective cultural backgrounds and to avoid implicit and explicit biases.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Death of a Child in the Emergency Department

Reaffirmed January 2019

Revised by the American Academy of Pediatrics April 2014, the Emergency Nurses Association October 2012 and ACEP March 2013

Reaffirmed October 2008 by ACEP and the American Academy of Pediatrics

Approved June 2002 by the American Academy of Pediatrics

Originally approved February 2002.

This policy statement is accompanied by a Technical Report titled, "Death of a Child in the Emergency Department"

A joint policy statement of the American College of Emergency Physicians, American Academy of Pediatrics, and the Emergency Nurses Association

ABSTRACT. The American Academy of Pediatrics (AAP), American College of Emergency Physicians (ACEP), and Emergency Nurses Association (ENA) have collaborated to identify practices and principles to guide the care of children, families, and staff in the challenging and uncommon event of the death of a child in the emergency department.

Key words: emergency department, death, child, pediatrician, nurse.

ABBREVIATIONS: ED, emergency department; AAP, American Academy of Pediatrics; ACEP, American College of Emergency Physicians; ENA, Emergency Nurses Association.

INTRODUCTION

The death of a child in the emergency department (ED) is an event with emotional, cultural, procedural, and legal challenges. The original policy statement, "Death of a Child in the Emergency Department; Joint Statement by the American Academy of Pediatrics and the American College of Emergency Physicians," was first published in 2002. It represented a groundbreaking collaboration between general and pediatric emergency practitioners regarding their professional obligations in managing the death of a child in the ED, recognized as one of the most difficult challenges in emergency care. This revised statement expands that collaboration to include emergency nursing and is issued jointly by the American Academy of Pediatrics (AAP), the American College of Emergency Physicians (ACEP), and the Emergency Nurses Association (ENA).

The infrequency of child death in the ED and the enormity of the tragedy magnify the challenges in simultaneously providing clinical care, holistic support for families, and care of the team delivering care while attending to significant operational, legal, ethical, and spiritual issues. The evidence basis for these recommendations is detailed in the accompanying technical report of the same title.[1]

RECOMMENDATIONS

The AAP, ACEP, and ENA support the following principles:

- The ED health care team uses a patient-centered, family-focused, and team-oriented approach when a child dies in the ED.
- The ED health care team provides personal, compassionate, and individualized support to families while respecting social, spiritual, and cultural diversity.
- The ED health care team provides effective, timely, attentive, and sensitive palliative care to patients with lifespan-limiting conditions and anticipated death presenting to the ED for end-of-life care.
- The ED health care team clarifies with the family the child's medical home and promptly notifies the child's primary care provider and appropriate subspecialty providers of the death and, as appropriate, coordinates with the medical home and primary care provider in follow-up of any postmortem examination.
- ED procedures provide a coordinated response to a child's death including:
  - Written protocols regarding:
    - family member presence during and after attempted resuscitation
    - preterm delivery resuscitation
    - end-of-life care/anticipated death in the ED of a child with a lifespan-limiting condition
    - collaboration with law enforcement staff to address forensic concerns while providing compassionate care
    - institutional position on permitting the practice of procedures involving the newly deceased
    - best practice-outlining procedures after the death of a child (eg, a "death packet" with guidelines for completion of a death certificate, organ donation, etc)
  - Processes for notification of primary care and subspecialty providers and medical home of the impending death or death of their patient
  - Identification of resources, including other individuals and organizations, that can respond to the ED to assist staff and bereaved families, such as child life, chaplaincy, social work, behavioral health, hospice, or palliative care staff
  - Identification and notification of medical examiner/coroner regarding all deaths, as directed by applicable law
  - Routine offering of postmortem autopsy to families for all non-medical examiner-coroner cases
  - Clear processes for organ and tissue procurement
  - Identification and reporting of cases of suspected child maltreatment
  - Formal voluntary support and programs for ED staff and trainees, out-of-hospital providers, and others who are experiencing distress
  - Support of child death review activities to understand causes of preventable child death
- Emergency medicine, pediatric resident, and emergency nurse training includes specific education regarding the difficult issues raised by the death of a child in the ED, such as:
  - Evidence for supporting family presence during attempted resuscitation
  - Best palliative care practices for imminently dying pediatric patients
  - Communicating the new of the death of a child in the ED to parents and family
  - Best practice in discussion of organ donation or autopsy
  - Filing the report of suspected child abuse or neglect in the setting of child death
  - Medical-legal issues and best practice surrounding completion of death certificates
  - Optimal documentation and collaboration with state and local child death review teams to identify strategies to prevent future child deaths
  - Self-care following difficult or troubling ED cases
- The ED health care team routinely considers care for the bereaved members of the patient's family that may include information and arrangements for bereavement care services, condolence cards, and follow-up with family to address any concerns or questions.

LEAD AUTHORS
Patricia J. O'Malley, MD, FAAP
Isabel A. Barata, MD, FACEP, FAAP
Sally K. Snow, RN, BSN, CPEN, FAEN

AMERICAN ACADEMY OF PEDIATRICS, COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 2012-2013
Joan E. Shook, MD, MBA, FAAP, Chairperson
Alice D. Ackerman, MD, MBA, FAAP
Thomas H. Chun, MD, MPH, FAAP
Gregory P. Conners, MD, MPH, MBA, FAAP
Nanette C. Dudley, MD, FAAP
Susan M. Fuchs, MD, FAAP
Marc H. Gorelick, MD, MSCE, FAAP
Natalie E. Lane, MD, FAAP
Brian R. Moore, MD, FAAP
Joseph L. Wright, MD, MPH, FAAP

LIAISONS
Isabel A. Barata, MD – American College of Emergency Physicians
Kim Bullock, MD – American Academy of Family Physicians
Jennifer Daru, MD, FAAP – AAP Section on Hospital Medicine
Toni K. Gross, MD, MPH, FAAP – National Association of EMS Physicians
Elizabeth Edgerton, MD, MPH, FAAP – Maternal and Child Health Bureau
Tamar Magarik Haro – AAP Department of Federal Affairs
Jaclynn S. Haymon, MPA, RN – EMSC National Resource Center
Cynthia Wright, MSN, RNC – National Association of State EMS Officials
Lou E. Romig, MD, FAAP – National Association of Emergency Medical Technicians
Sally K. Snow, RN, BSN, CPEN, FAEN – Emergency Nurses Association
David W. Tuggle, MD, FAAP – American College of Surgeons

STAFF
Sue Tellez

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS, PEDIATRIC EMERGENCY MEDICINE COMMITTEE, 2012-2013
Isabel A. Barata, MD, FACEP, FAAP, Chairperson

Kiyetta Alade, MD
Jahn T. Avarello, MD, FACEP
Lee S. Benjamin, MD, FACEP
Kathleen Brown, MD, FACEP

Richard M. Cantor, MD, FACEP
Ann Marie Dietrich, MD, FACEP
James M. Dy, MD
Paul J. Eakin, MD
Marianne Gausche-Hill, MD, FACEP, FAAP
Michael Gerardi, MD, FACEP, FAAP
Charles J. Graham, MD, FACEP
Doug K. Holtzman, MD, FACEP
Mark Hostetler, MD, FACEP
Jeffrey Hom, MD, FACEP
Paul Ishimine, MD, FACEP
Hasmig Jinivizian, MD
Madeline Joseph, MD, FACEP
Sanjay Mehta, MD, Med, FACEP
Aderonke Ojo, MD, MBBS
Audrey Z. Paul, MD, PhD
Denis R. Pauze, MD, FACEP
Nadia M. Pearson, DO
Brett Rosen, MD
Mohsen Saidinejad, MD
Gerald R. Schwartz, MD, FACEP
Annalise Sorrentino, MD, FACEP
Jonathan H. Valente, MD, FACEP
Muhammad Waseem, MD, MS
Paula J. Whiteman, MD, FACEP
Michael Witt, MD, MPH, FACEP

LIAISONS
Joan Shook, MD, FACEP, FAAP – AAP Committee on Pediatric Emergency Medicine
Jaclynn S. Haymon, MPA, RN – EMSC National Resource Center
Elizabeth Edgerton, MD, MPH – EMSC Injury and Violence Prevention

STAFF
Stephanie Wauson

EMERGENCY NURSES ASSOCIATION, PEDIATRIC COMMITTEE, 2011-2012
Sally K. Snow, BSN, RN, CPEN, FAEN – 2011 Chair
Michael Vicioso, MSN, RN, CPEN, CCRN – 2012 Chair
Jason T. Nagle, ADN, RN, EMT-P, CEN, CPEN
Anne M. Renaker, DNP, RN, CNS, CPEN
Flora Tomoyasu, MSN, RN, CNS
Sue Cadwell, MSN, BSN, RN, NE-BC
Shari Herrin, MSB, MBA, RN, CEN
Deena Brecher, MSN, RN, APRN, CEN, CPEN, ACNS-BC, Board Liaison

STAFF LIAISONS
Kathy Szumanski, MSN, RN, NE-BC
Dale Wallerich, MBA, BSN, RN, CEN
Christine Siwik

REFERENCE

1. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine; American College of Emergency Physicians, Pediatric Committee; Emergency Nurses Association; Pediatric Committee. Technical report: death of a child in the emergency department. *Pediatrics*. 2014; in press.

SELECTED RESOURCES

American Academy of Pediatrics, Committee on Pediatric Emergency Medicine; American College of Emergency Physicians, Emergency Medicine Committee. Death of a Child in the emergency department; joint statement by the American Academy of Pediatrics and the American College of Emergency Physicians. *Pediatrics*. 2002;110(4):839-840

Atwood DA. To hold her hand: family presence during patient resuscitation. *JONAS Healthc Law Ethics Regul*. 2008;10(1):12-16

Browning DM, Meyer EC, Truog RD, Solomon MZ. Difficult conversations in health care: cultivating relational learning to address the hidden curriculum. *Acad Med*. 2007;82(9):905-913

American Academy of Pediatrics, Committee on Child Abuse and Neglect, Committee on Injury, Violence, and Poison Prevention, Council on Community Pediatrics. Child fatality review. *Pediatrics*. 2010;126(3):592

Covington TM, Rich SK, Gardner JD. Effective models of review that work to prevent child deaths. In: Alexander R, ed. *Child Fatality Review: An Interdisciplinary Guide and Photographic Reference*. St. Louis, MO: GW Medical Publishing Inc; 2007:429-457

Dingeman RS, Mitchel EA, Meyer EC, Curley MA. Parent presence during complex invasive procedures and cardiopulmonary resuscitation: a systematic review of the literature. *Pediatrics*. 2007;120(4):842-854

Dudley N, Hansen K, Furnival R, Donalson A, Van Wagenen K, Scaife E. The effect of family presence on the efficiency of pediatric trauma resuscitations. *Ann Emerg Med*. 2008;53(6):777.e3-784.e3

Emergency Nurses Association. Position Statement: Emergency Nursing Resource: Family Presence During Invasive Procedures and Resuscitation in the Emergency Department. Des Plaines, IL: Emergency Nurses Association; 2010. Available at: http://www.ena.org/SiteCollectionDocuments/Position%20Statements/FamilyPresence.pdf. Accessed July 19, 2012

Levetown M; American Academy of Pediatrics, Committee on Bioethics. Communicating with children and families: from everyday interactions to skill in conveying distressing information. *Pediatrics*. 2008;121(5):e1441- e1460

Meyer EC, Sellers DE, Browning DM, McGuffie K, Solomon MZ, Truog RD. Difficult conversations: improving communication skills and relational abilities in health care. *Pediatr Crit Care Med*. 2009;10(3):352-359

Overly F, Sudikoof SN, Duffy S, Anderson A, Kobayashi L. Three scenarios to teach difficult discussions in pediatric emergency medicine: sudden infant death, child abuse with domestic violence, and medication error. *Simul Healthc*. 2009;4(2):114-130

Sekula LK. The advance practice forensic nurse in the emergency room setting. *Top Emerg Med.* 2005:27(1):5-14

Truog RD, Christ G, Browning DM, Meyer EC. Sudden traumatic death in children: we did everything, but your child didn't survive. *JAMA*. 2006;295(22):2646-2654

Wisten A, Zingmark K. Supportive needs of parents confronted with sudden cardiac death—a qualitatitive study. *Resuscitation*. 2007;74(1):68-74

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2022

Defining the Job Description of an Emergency Physician

Originally approved September 2022

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) titled "Physical and Cognitive Skills Required for the Practice of Clinical Emergency Medicine"

Emergency physicians may undertake various roles within the field of emergency medicine, including, but not limited to, clinical care, administration, oversight, leadership, education, research, quality, and patient safety. However, the fundamental role and definition of an emergency physician relies on an individual's capability to actively provide clinical care, potentially deploying a full range of physical and cognitive skills to provide emergency medical care. A qualified emergency physician may be able to perform these essential functions with reasonable accommodations, as long as they do not pose a significant risk of substantial harm to the health or safety of the individual or others that cannot be eliminated. In addition, such accommodations should not pose an undue hardship on the provision of emergency medical care.

For more information, see ACEP's Policy Resource and Education Paper (PREP) "Physical and Cognitive Skills Required for the Practice of Clinical Emergency Medicine."

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Definition of "Admit Time"

Revised February 2023

Originally approved June 2016

"Admit time" is defined as the time when the "Order to Admit" is placed by the emergency department (ED) physician, or the physician assistant or nurse practitioner working as part of the emergency physician-led team, or the time when the inpatient bed request is placed, whichever is earliest.

This current definition does not necessarily equate to "decision to admit" by the ED physician which may be earlier than the admit time. The "decision to admit" intends to capture completion of the emergency physician's cognitive workflow and identification that the patient needs to be admitted.

This definition may be difficult to operationalize in some environments. In those cases, an alternate definition that could be used, as developed by the Emergency Department Benchmarking Alliance in 2014:

> First documented date and time of the disposition to admit the patient from the ED. As admission processes vary at different hospitals, this can use the first documented time of any of the following: 1) admission order (this may be an operational order rather than the hospital admission to inpatient status order), 2) disposition order (must explicitly state to admit), 3) documented bed request, or 4) documented acceptance from admitting physician. This is not the "bed assignment time" or "report called" time.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Definition of an Emergency Physician

Revised April 2023

Reaffirmed April 2017

Originally approved June 2011

An emergency physician is defined as a physician who is certified (or eligible to be certified) by the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM) or an equivalent international certifying body recognized by ABEM or AOBEM in emergency medicine or pediatric emergency medicine, or who is eligible for active membership in the American College of Emergency Physicians.

It should be noted that residents in an Accreditation Council for Graduate Medical Education (ACGME)-approved or equivalent international accrediting body-approved residency in emergency medicine are "emergency medicine resident physicians."

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Definition of an Emergency Service

Reaffirmed January 2021, June 2015, October 2002, October 1998

Revised April 2009, January 1994 with current title

Originally approved October 1982 titled "Bona Fide Emergency Defined"

An emergency service is any health care service provided to evaluate and/or treat any medical condition such that a prudent layperson possessing an average knowledge of medicine and health, believes that immediate unscheduled medical care is required.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Definition of Boarded Patient

Revised September 2018

Reaffirmed October 2017

Originally approved January 2011

Many emergency departments experience critical overcrowding and heavy emergency resource demand, which hampers the delivery of high-quality medical care and compromises patient safety. (Chalfin DB, Trzeciak S, Likourezos A, et al. Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med*. 2007;35(6):1477-1483).

In order for emergency departments to continue to provide quality patient care and access to that care, ACEP believes a "boarded patient" is defined as a patient who remains in the emergency department after the patient has been admitted or placed into observation status at the facility but has not been transferred to an inpatient or observation unit.

The primary cause of overcrowding is boarding: the practice of holding patients in the emergency department after they have been admitted to the hospital, because no inpatient or observation beds are available. This practice often results in a number of problems, including ambulance refusals, prolonged patient waiting times, and increased suffering for those who wait, lying on gurneys in emergency department corridors for hours, and even days, which affects not only their care and comfort but also the primary work of the emergency department staff taking care of emergency department patients. When EDs are overwhelmed, their ability to respond to community emergencies and disasters may also be compromised.

The time at which boarding starts, or the time-zero, is the time at which the decision has been made to admit or place the patient into observation status.

Reducing the time that patients for whom an "admit" or "observation" decision has been made remain in the emergency department (ED) can improve access to treatment and increase quality of care. ACEP agrees with the National Quality Forum deliberations noting the importance of examining the median time from admit decision time to time of departure from the ED for patients admitted to inpatient status:

> A proxy for emergency department crowding includes the proportion and lengths of time patients remain in the emergency department after the decision to admit.[6] Studies have shown that boarding patients in the emergency department can lead to greater hospital lengths of stay over prompt admissions.[7,8] Reducing this time potentially improves access to care

specific to patient condition and increases the capability of facilities to provide additional treatment. (NQF: *National Voluntary Consensus Standards for Emergency Care – Phase II:Hospital-based Emergency Care Measures,* June 2008).

[6] United States General Accounting Office GAO. Hospital Emergency Departments: crowded conditions vary among hospitals and communities. 2003; GAO-03-460.
[7] Krochmal P, Riley TA. Increased health care costs associated with ED overcrowding. *Am J Emerg Med*. 1994;12:265-266.
[8] Nawar ED, Niska RW, Xu J. National Hospital Ambulatory Medicare Care Survey: 2005 emergency department summary. *Adv Data*. 2007; (386):1-32.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Definition of Clinical Ultrasonography

Reaffirmed June 2022

Originally approved January 2014

The American College of Emergency Physicians (ACEP) defines clinical ultrasonography as a diagnostic modality that provides clinically significant data not obtainable by inspection, palpation, auscultation, or other components of the physical examination. It is a distinct clinical modality, not an adjunct to or extension of the physical examination.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Definition of Democracy in Emergency Medicine Practice

Revised January 2021

Reaffirmed April 2014

Originally approved June 2008

Emergency medicine democratic groups are defined by their governing structure which should be in writing and available for review by potential new members.

Democratic groups should be governed by a body that is subject to change by fair and transparent elections that embody a one-vote-one-person structure and philosophy or a representative vote recognizing equity ownership/seniority within the group.

The governing body (or the electorate) should have complete control over the finances and decision making in the group. Financial equity in the group should be structured in such a manner that a new member has a realistic set of expectations as to his/her potential costs, liabilities, and benefits before making the decision to join the group.

All members/owners of the group should have:

- a right to petition the governing body for redress and grievances;
- access to a fair due-process procedure;
- freedom to speak (within the business confines of the group and in a non-disruptive manner) that should be exercised without fear;
- an equal and realistic ownership opportunity within the group;
- equal opportunity for management positions within the group;
- a transparent environment including unencumbered access to individual physician billing information; and
- compensation that reflects fair market value for services provided.

With democracy, there comes obligation; there is a fiduciary responsibility to the group and an ethical responsibility for all members/owners.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Definition of Emergency Medicine

Revised January 2021, June 2015, April 2008, April 2001

Reaffirmed October 1998

Revised April 1994 with current title

This statement replaces "Definition of Emergency Medicine and the Emergency Physician" *Ann Emerg Med* (Adopted March 1986; 15:1240-1241 October 1986)

Emergency medicine is the medical specialty dedicated to the diagnosis and treatment of unforeseen illness or injury. It encompasses a unique body of knowledge as set forth in the "Model of the Clinical Practice of Emergency Medicine." The practice of emergency medicine includes the initial evaluation, diagnosis, treatment, coordination of care among multiple clinicians or community resources, and disposition of any patient requiring expeditious medical, surgical, or psychiatric care.

Emergency medicine is not defined by location but may be practiced in a variety of settings including, but not limited to, hospital-based and freestanding emergency departments (EDs), urgent care clinics, observation medicine units, emergency medical response vehicles, at disaster sites, or via telehealth.

Emergency medicine encompasses planning, oversight, and medical direction for community emergency medical response, medical control, and disaster preparedness. Emergency medicine professionals provide valuable clinical, administrative, and leadership services to the emergency department and other sectors of the health care delivery system.

Emergency physicians are the foundation of the United States health care system's patient safety net. They possess a clear understanding of the various sectors of the health care delivery system and the needs of their patients. Emergency physicians are uniquely positioned to evaluate, plan, and implement community and regional public health initiatives.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Definition of Emergency Medicine Residency

Originally approved June 2021

The term "resident" and "residency training" in a medical setting should only apply to postgraduate training of physicians within graduate medical education (GME) training programs and should not be used for the post-graduate training of other health professions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Delivery of Care to Undocumented Persons

Revised June 2018

Reaffirmed February 2018, April 2012, October 2006, and July 2000

Originally approved January 1995

The American College of Emergency Physicians (ACEP) opposes federal and state initiatives which require physicians and health care facilities to refuse care to undocumented persons or to report suspected undocumented persons to immigration authorities. Emergency providers are required by federal law (EMTALA) to provide stabilization to all persons who present to them. Based on our moral and legal obligations, we do not discriminate against any patient based on race, gender, national identity or ability to pay. ACEP opposes actions that might dissuade any ill or injured patient from seeking care, including fear of intervention by immigration authorities. As such, ACEP supports all emergency departments and emergency providers in not inquiring about or reporting immigration status unless specifically relevant. Patients in need should be assured that emergency departments are safe zones for all.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2022

Disaster Data Collection

Revised September 2022, June 2016, August 2007

Originally approved October 2000

The American College of Emergency Physicians (ACEP) believes key stakeholders should develop real-time syndromic surveillance to capture a majority of clinical illnesses and injury patterns on a mass scale. Early identification can improve the response to an incident or reduce an epidemic's potential, leading to a reduction of morbidity and mortality, as well as overall cost.

ACEP supports real-time health system capacity surveillance to identify health system constraints and availability during periods of disaster related surge. Accurate health system surveillance is crucial to achieving equitable health system access during disasters.

ACEP further supports prospective and retrospective disaster data collection and research which is critical for future disaster preparedness and response. Accurate data collection in a disaster can be difficult without government mandate and assistance.

Therefore, ACEP supports the following:

- EMS and public health systems and agencies play an active role in real-time disaster data collection and sharing.
- Real-time reporting of all injuries and illnesses related to officially declared disasters and terrorist events.
- Real-time use of local health agency disaster collection databases to track disaster-related injuries and illnesses to enhance local disaster response.
- Real-time cross health system bed and resource availability data platforms (ie, staffing, equipment, PPE)
- Real-time syndromic and health system data platforms be incorporated into routine public health and health system operations.
- A coordinated response across health care and emergency response agencies for the purpose of a public health syndromic surveillance network to identify an infectious disease outbreak or other public health concerns.
- Documentation of disaster related ICD-10 codes for the purposes of data and research.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Disaster Medical Response

Reaffirmed June 2019

Revised June 2013

Originally approved June 2006

The American College of Emergency Physicians (ACEP) supports a national credentialing mechanism and up-to-date database of available physicians and medical volunteers who could be deployed as needed in the face of a national emergency. A policy and program must be in place to provide these responders with workers' compensation and medical liability protection when deploying to a disaster at the request of the federal or state government.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2024

Disaster Medical Services

Reaffirmed March 2024

Revised June 2018

Reaffirmed April 2012, October 2006

Revised June 2000

Reaffirmed March 1997

Originally approved June 1985

The American College of Emergency Physicians (ACEP) believes that emergency physicians should assume a primary role in disaster preparedness and response, throughout all phases of the disaster life cycle. The provision of effective disaster medical services requires prior training or experience, which is a component of emergency medicine residency training. Additionally, emergency physicians should be encouraged to pursue continued training enabling them to best fulfill this responsibility.

A medical disaster occurs when the destructive effects of natural or man-made forces overwhelm the ability of a given area or community to meet the demand for health care. Where local, regional, and national disaster networks exist, emergency physicians should participate in strengthening them. Where they are not yet functional, emergency physicians should assist in planning and implementing them.

Disaster preparedness and response is a multidisciplinary activity that requires cooperation and frequent training exercises. Each agency or individual contributes unique capabilities, perspectives, and experiences that complement one another. Within this context, emergency physicians contribute both medical and operational expertise and share the responsibility for ensuring an effective and well-integrated disaster response.

Disaster medical services and emergency medical services share the goal of optimal acute health care; however, in achieving that goal, the two systems may use different approaches. The medical control of emergency medical services lies within the domain of emergency medicine. During a disaster, it remains the responsibility of emergency physicians to continue their regular responsibilities, in addition to disaster medical service-related roles.

The advancement of disaster medicine requires the integration of data from research and experience. Emergency physicians must use their skills in research, education, and organization to incorporate and disseminate these improvements as new concepts and technologies emerge.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Disaster Planning and Response

Reaffirmed January 2021

Revised June 2015

Originally approved June 2008

The American College of Emergency Physicians (ACEP) encourages emergency physicians to:

1. Assist their institutions and community to prepare for and respond to disasters.
2. Continue to serve their communities and nation during time of disasters.
3. Implement actions to protect themselves, their families, their co-workers, and their patients from risks.
4. Work with institutional and public leaders to effectively communicate public health and safety information to co-workers and the public.
5. Serve as subject-matter experts on the allocation of scarce health care resources, when necessary.

The American College of Emergency Physicians will, when possible and appropriate during disasters, use its resources to disseminate current, scientifically based information from national experts.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Disaster Telehealth

Originally approved January 2024

The American College of Emergency Physicians (ACEP) believes that emergency physicians should assume a leading role in disaster preparedness and response throughout all phases of the disaster life cycle. Disaster telehealth refers to the use of telecommunication technologies and digital platforms to deliver healthcare services and support during or after a natural or man-made disaster. The capability allows physicians to remotely assess, diagnose, treat, and support patients who are affected by a disaster or those who are unable to access healthcare facilities due to disrupted infrastructure or mobility constraints. Disaster telehealth includes various services, such as virtual consultations, remote patient monitoring, prescription management, mental health counseling, and triage, among others. This approach helps to improve the quality of care, reduce the burden on emergency departments, and increase the accessibility and efficiency of healthcare services in disaster-prone areas. Disaster telehealth can also include peer-to-peer telehealth consults to support remote clinicians to enable access to subspecialist expertise not available in austere settings, as well as educational content such as webinars directed both to patients and to clinicians to extend knowledge exchange further into the disaster area. ACEP believes that disaster telehealth has a role as a force multiplier, capacity augmentation, and capacity building tool in disaster preparedness and response and offers measurable potential to improve the clinical outcomes of victims of, and those affected by, disaster events.

ACEP believes that:

1. Telehealth can improve access to care for those affected by disaster situations, including those who are underserved or in need due to healthcare disparities, financial burden, lack of physical access or transportation, and during and after disasters. Disaster telehealth should be available for utilization during all three phases of the disaster management cycle (readiness, response, and recovery) and can offer services and expertise that may otherwise not be available due to the immediate or lasting effects of the disaster. Disaster telehealth can assist first responders or first receivers to determine the need for lifesaving and damage control interventions and prioritize transport. During the post-disaster recovery phase, telehealth can improve the delivery of timely care and maximize the quality of care in the resource-scarce environment during the initial and prolonged response to a disaster. Remote resources can support affected areas during the recovery phase as the local healthcare delivery system recovers. It also has the potential to lower the cost of this health care by matching appropriate resources to identified needs. For disaster telehealth to be most effective and efficient, it must exist in the local healthcare delivery system before any disaster with ongoing and sustained continuous maintenance of equipment, training, credentialing, quality assurance, and competencies of

licensed healthcare professionals. Emergency physicians, including those experienced and knowledgeable in disaster medicine and emergency medical services, are best suited to supervise and deliver disaster telehealth care.

2. Funding for pilot projects and research/studies designed to implement, provide, and study clinical outcomes, key performance indicators, and limiting factors affecting disaster telehealth before and during declared disasters is paramount. Telehealth is just one type of care delivery model that should be included and financially supported in a care package for disaster response and recovery in locations with robust existing telehealth services. In a technologically robust environment, telehealth allows the clinician pool to rapidly respond and provide expertise to affected patients more rapidly and robustly than an in-person encounter can accomplish in a resource-scarce environment. The Federal Emergency Management Agency, Health Resources & Services Administration, Centers for Disease Control, Department of Health and Human Services, Center for Medicare Services, Department of Defense, Administration for Strategic Preparedness and Response, Advanced Research Projects Agency for Health, Veteran's Health Administration, other federal and state, and private entities are key stakeholders in the process and should be engaged for collaboration, research opportunities, and financial partnerships. These sources are encouraged to financially support pilot projects and studies with the encouragement to assemble broad-based collaboration between and amongst first responders, first receivers, and health care delivery systems to include primary care and the whole gamut of health care professionals who have assets essential for a community to respond to and recover after a disaster.

3. Local emergency medical services (EMS) is already involved during the disaster cycle and is a logical choice to be a key partner to participate in disaster telehealth if they have developed telehealth capabilities. Educational programs and training of first responders and disaster workers to participate in the delivery of telehealth is essential. The education and training should be done by, or under the supervision of, those knowledgeable and experienced in emergency medicine, disaster medicine, and/or EMS. Special consideration for the inclusion of experts in pediatric emergency medicine, geriatric medicine, toxicology and environmental medicine, and infectious disease should be given as subject matter expertise is expanded. ACEP should develop a network of recognized experts in disaster telehealth to provide support to organizations that lack this expertise endogenously.

4. Disaster telehealth is hindered by significant challenges, and increasing the reach of telehealth will require focused attention to mitigate the limitations created by physical landscape disruption, geographical isolation, inclement weather, internet and other communications outages, as well as infrastructure disruptions such as electrical, water, transportation, and mass population displacement. Careful exploration of the appropriate circumstances that will most benefit from disaster telehealth should be conducted to ensure resources are allocated to the most impactful interventions in a disaster response. Disaster telehealth should be viewed as one potential response tool for disaster response, and identifying appropriate disaster scenarios and assessing telehealth systems that can respond to the situation are essential to prioritizing response capabilities. Research into mitigation strategies to address these operational challenges to the deployment of effective disaster telehealth is limited and should be encouraged and partnerships built with key players in the space.

5. As disaster telehealth expands and becomes an essential tool for disaster response, a federal lead agency must be established for disaster telemedicine. This agency will be tasked with addressing integration, data gathering, interoperability, and coordination issues. Disaster telehealth faces significant regulatory challenges that will require national-level advocacy to address, and ACEP should be a key player in these advocacy efforts. There currently exists a conflicting patchwork of state medical board licensing regulations on inter-state telemedicine, which must be resolved to allow disaster telehealth to work effectively across state lines. Currently, there is an absence of national digital interoperability standards for telemedicine equipment systems, which hinders the ability to work across response agencies and

does not allow for integration into electronic medical records. This standard must be established to allow for the development of robust, redundant, and interoperable systems.

6. Malpractice and licensing considerations are currently a barrier to a seamless disaster telehealth response system. Legislation to enable physicians to perform disaster telehealth across state lines to support impacted areas, as well as provide liability protections, should be introduced and supported to address state license limitations that would hamper interstate support of disaster areas, as well as ensure appropriate patient safety considerations.

7. Data safety and integrity safeguards must also be implemented to maintain privacy and data integrity during disaster operations. Disaster telehealth systems need to work in technology-rich environment, as well as austere environments, supporting full spectrum communication from real-time video and interactive assessments down to low-resource, low-bandwidth solutions. Systems must address acceptable use considerations, ensure appropriate practitioner credentialing, provide solutions for privacy concerns, and employ safeguards to protect against cybersecurity threats. Data sharing infrastructure, incorporation into the patient's medical record, and patient access should also be incorporated into systems as they are built to support seamless integration into existing electronic health records. Redundancy should be built into systems that will allow information sharing and data backup to ameliorate data compromises from natural disasters and in cases of cyberterrorism that targets critical medical infrastructure.

8. Ethical considerations of disaster telehealth should be paramount as new technology is developed and implemented. Social determinants of health show key impacts in disasters, as well as other areas of health outcomes, and disaster telehealth, has the potential to improve access to care for isolated and disadvantaged communities. As networks are developed, care must be taken to provide a full range of solutions for technologically robust and austere environments. Disaster telehealth systems must also be developed with careful consideration of health equity to ensure that resources are positioned to support patients across the spectrum of healthcare needs. A key principle of disaster medicine is local control of the support requests is the best way to match needs to available technology, and the deployment and positioning of telehealth resources should be built with this request deployment model in mind.

9. ACEP members possess key knowledge to serve as leaders in the development of disaster telehealth operations, and ACEP will continue to foster the development of this space through subject matter expert interactions, supporting in-person and virtual engagements, and encouraging research. ACEP will also advocate for appropriate legislative solutions required to enable telemedicine to serve as a force multiplier in disaster situations, as identified by experts in the field.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2023

Disclosure of Medical Errors

Revised March 2023,
April 2017, April 2010

Originally approved
September 2003

The American College of Emergency Physicians (ACEP) believes that emergency physicians should provide prompt and truthful information to patients or their representatives about their medical conditions and treatments. Decades of patient safety research have shown that medical error resulting from both system and human factors can and does occur in all healthcare settings, including the emergency department (ED). Medical error is defined as the preventable failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.

If, after careful review of all available relevant information, an emergency physician determines that a medical error has occurred during their care of a patient in the ED, the physician or an appropriate designee should inform the patient in a timely manner that an error has occurred. They should also provide information about the error and its consequences, following institutional and practice group policies and applicable state statutes. If the patient is incapacitated and therefore unable to receive this information, an emergency physician or an appropriate designee should provide the information to the patient's representative.

To show respect for the patient and commitment to patient welfare, disclosure of a medical error in the patient's care should include 1) an explicit statement that an error has occurred, 2) a factual description of the error and its clinical implications, 3) an apology, and 4) description of any system review to prevent similar future errors. Content may vary if specifically limited by legal constraints. Depending on specific circumstances and institutional or practice group policies and considering applicable state statutes, this disclosure may be offered by the emergency physician, another member of the patient's health care team, or an officer of the institution.

In some cases, it may be apparent that an ED patient had a poor outcome but may not be obvious whether this was the result of a medical error or was an unavoidable complication of an appropriate treatment. When such an adverse event occurs, an emergency physician or an appropriate designee should inform the patient or the patient's representative that a problem has occurred in the patient's care, that the problem is being examined, and that additional information will be provided when it is available.

This policy addresses errors that occur as a result of care received in the ED by emergency physicians but does not address errors made as a result of care received after the patient leaves the ED or after the care has been transferred to an admitting service.

ACEP recognizes that substantial obstacles, including unrealistic expectations of physician infallibility, lack of training about disclosure of errors, and fear of increased malpractice exposure, may obstruct the free disclosure to patients of medical errors. To overcome these obstacles, ACEP recommends the following initiatives:

- Health care institutions should develop and implement policies and procedures for identifying and responding to medical errors, including continuous quality improvement (CQI) systems and procedures for disclosing significant errors to patients.

- Medical educators should develop and provide specific instruction to trainees at all levels on identifying and preventing medical errors and on communicating truthfully and sensitively about errors with patients or their representatives.

- States should enact legislation that makes apology statements by physicians related to disclosure of medical errors inadmissible in malpractice actions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Disinfection of Ultrasound Transducers Used for Percutaneous Procedures

Revised April 2021 with current title

Originally approved October 2020 titled "Low-Level Disinfection of Ultrasound Transducers Used for Percutaneous Procedures"

A joint policy statement of the American College of Emergency Physicians, American Institute of Ultrasound in Medicine, Association for Professionals in Infection Control and Epidemiology, Association for Vascular Access, Society for Healthcare Epidemiology of America

We, the undersigned organizations, wish to address the issue of disinfection of transcutaneous ultrasound transducers used for percutaneous procedures or for the purpose of monitoring other invasive procedures.

Current guidelines from multiple clinical societies have endorsed the use of low-level disinfection (LLD) for transcutaneous ultrasound transducer cleaning and disinfection used for guidance of percutaneous procedures.[1-3] Some organizations are not congruent regarding their recommendations for disinfection.[1, 4-7] In some cases, guidelines that address endocavity transducers are being misapplied to percutaneous and vascular- access applications. The Spaulding classification[8] is meant for intended uses, and some of the above guidelines reclassify intended non-critical applications as semi-critical.[5-7] Recommendations for high-level disinfection (HLD) of sheathed probes used for percutaneous procedures are not evidence-based and will result in unwarranted and unnecessary use of resources, increasing the possibility of safety events if percutaneous procedures are performed without ultrasound guidance.[9] This statement addresses several specific points that we regard as pivotal for determining when the use of HLD or a different level is appropriate. Specifically:

1. Ultrasound-guided percutaneous procedures are imaged transcutaneously, ie, through intact skin, to monitor procedures done percutaneously in conjunction with a transducer cover and can be safely performed in conjunction with LLD.[10-12]
2. Transducer covers for transcutaneous procedures are meant to protect the sterility of the procedure, not to make the transducer sterile. An analogous situation exists for human hands in surgical procedures. The gloves that cover the hands adequately protect the procedure from contamination,

even though only LLD via hand washing is performed prior to surgery. LLD via proper hand washing plus sterile gloves has been safely used for over a century and LLD of devices placed inside of sterile covers should be equally safe.[10-12]

3. If contamination of covered transcutaneous transducers with blood or other bodily fluids occurs, it can be eliminated with low-level disinfectants that are effective against mycobacteria and bloodborne pathogens (including hepatitis B virus, hepatitis C virus, and HIV).[13-17] Human hands are always cleaned LLD and covered with gloves.[18]
4. HLD was meant to clean instruments intended for contact with internal organs or mucous membranes.[19-26] Evidence of infection from US transducers relates to contaminated gel and improper cleaning of internal transducers.[19, 20, 23-25, 27, 28]

We recommend cleaning and disinfection for the reprocessing of transducers used for percutaneous sheathed US procedures on the basis of the scientific and safety information available. We also call on other organizations that address this issue to disclose contributions from manufacturers of US disinfection equipment.

Respectfully,
American College of Emergency Physicians
American Institute of Ultrasound in Medicine
Association for Professionals in Infection Control and Epidemiology
Association for Vascular Access
Society for Healthcare Epidemiology of America

References

1. AIUM. Guidelines for Cleaning and Preparing External- and Internal-Use Ultrasound Transducers and Equipment Between Patients as well as Safe Handling and Use of Ultrasound Coupling Gel. 2020, cited 2020; Available from: https://www.aium.org/officialStatements/57.
2. American College of Emergency Physicians. Guideline for Ultrasound Transducer Cleaning and Disinfection. [policy statement] 2018; Available from: https://www.acep.org/patient-care/policy-statements/guideline-for-ultrasound-transducer-cleaning-and-disinfection/.
3. Thompson J, Garrett JH. Transducer Disinfection for Evaluation and Insertion of Peripheral and Central Catheters for Vascular Access Teams and Clinicians. *J Vasc Access*. 2018;23(3):141-6.
4. National Center for Immunization and Respiratory Diseases (NCIRD) and Division of Viral Diseases. Environmental Cleaning and Disinfection Recommendations. 2020 March 6, 2020 [cited March 24, 2020]; Interim Recommendations for US Community Facilities with Suspected/Confirmed Coronavirus Disease 2019. Available from: https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html.
5. SDMS. Guidelines for Infection Prevention and Control in Sonography: Reprocessing the Ultrasound Transducer. *J Diagn Med Sonogr*. 2020;36(4):381-403.
6. World Federation for Ultrasound in Medicine and Biology Safety Committee. World Federation for Ultrasound in Medicine and Biology Position Statement: How to Perform a Safe Ultrasound Examination and Clean Equipment in the Context of COVID-19. *Ultrasound Med Biol*. 2020;46(7):1821-6.
7. Nyhsen CM, Humphreys H, Koerner RJ, et al. Infection prevention and control in ultrasound - best practice recommendations from the European Society of Radiology Ultrasound Working Group. *Insights Imaging*. 2017;8(6):523-5.
8. Spaulding E. Chemical disinfection and antisepsis in the hospital. *Hosp Res*. 1957;9:5-31.
9. Gase KA, McMullen KM, Wright Mo. Survey responses to policy changes-overextended consequences. *Am J Infect Control*. 2019;47(1):114-5.

10. Adhikari S, Blaivas M, Morris D, Lander L, et al. Comparison of infection rates among ultrasound-guided versus traditionally placed peripheral intravenous lines. *J Ultrasound Med*. 2010;29(5):741-7.
11. Caturelli E, Giacobbe A, Facciorusso D, et al. Free-hand technique with ordinary antisepsis in abdominal US-guided fine-needle punctures: three-year experience. *Radiology*. 1996;199(3):721-3.
12. Messina C, Sconfienza LM. Ultrasound-Guided Percutaneous Irrigation of Calcific Tendinopathy. *Semin Musculoskelet Radiol*. 2016;20(5):409-13.
13. Rutala WA, Weber DJ. Guideline for Disinfection and Sterilization in Healthcare Facilities. Centers for Disease Control and Prevention (CDC). 2008 revised 2019 cited 2020; Available from: https://www.cdc.gov/infectioncontrol/guidelines/disinfection/.
14. Sehulster LM, et al. Guidelines for environmental infection control in health-care facilities. Recommendations from CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). 2004 revised 2019 cited 2020; Available from: https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html.
15. Appendix A. Regulatory framework for disinfectants and sterilants. *Morb Mortal Wkly Rep*. 2003 revised 2003, cited 2020; 52(RR17); 62-64: Available from: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a2.htm.
16. Occupational Safety and Health Standards. 2020, cited 2020; Available from: https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030.
17. List B: EPA's Registered Tuberculocide Products Effective Against Mycobacterium tuberculosis. 2020, cited 2020; Available from: https://www.epa.gov/sites/production/files/2020-09/documents/20200922listb.pdf.
18. Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Am J Infect Control*. 2002;30(8):S1-S46.
19. Seki M, Machida H, Yamagishi Y,et al. Nosocomial outbreak of multidrug-resistant Pseudomonas aeruginosa caused by damaged transesophageal echocardiogram probe used in cardiovascular surgical operations. *J Infect Chemother*. 2013;19(4):677-81.
20. Shaban RZ, Maloney S, Gerradet J, et al. Outbreak of health care-associated Burkholderia cenocepacia bacteremia and infection attributed to contaminated sterile gel used for central line insertion under ultrasound guidance and other procedures. *Am J Infect Control.* 2017;45(9):954-8.
21. Paz A, Bauer H, Potasman I. Multiresistant Pseudomonas aeruginosa associated with contaminated transrectal ultrasound. *J Hosp Infect*. 2001;49(2):148-9.
22. Ferhi K, Rouprêt M, Mozer P, et al. Hepatitis C transmission after prostate biopsy. *Case Rep Urol*. 2013;797248.
23. Keizur JJ, Lavin B, Leidich RB. Iatrogenic urinary tract infection with Pseudomonas cepacia after transrectal ultrasound guided needle biopsy of the prostate. *J Urol*. 1993;149(3):523-6.
24. Abdelfattah R, Al-Jumaah S, Al-Qahtani A, et al. Outbreak of Burkholderia cepacia bacteraemia in a tertiary care centre due to contaminated ultrasound probe gel. *J Hosp Infect*. 2018;98(3):289-94.
25. US Food and Drug Administration. UPDATE on Bacteria Found in Other-Sonic Generic Ultrasound Transmission Gel Poses Risk of Infection. 2012, FDA Safety Communication.
26. Medicines and Healthcare Products Regulatory Agency (UK), Reusable transoesophageal echocardiography, transvaginal and transrectal ultrasound probes (transducers). 2012, Medical Device Alert.
27. Archived – Serious Risk of Infection From Ultrasound and Medical Gels – Revision 2004 June 5, 2013 March 24, 2020]; Notice to hospitals - Important Safety Information on Ultrasound and Medical Gels]. Available from: https://www.healthycanadians.gc.ca/recall-alert-rappel-avis/hc-sc/2004/14289a-eng.php#.
28. O'Rourke MP, Levan P, Khan T. Current use of ultrasound transmission gel for transesophageal echocardiogram examinations: a survey of cardiothoracic anesthesiology fellowship directors. *J Cardiothorac Vasc Anesth*. 2014;28(5):1208-10.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2019

Domestic Family Violence

Revised April 2019

Reaffirmed June 2013

Originally approved October 2007, replacing rescinded policies: Child Abuse; Domestic Violence; Emergency Medicine and Domestic Violence; Management of Elder Abuse and Neglect; Support for Victims of Family Violence; Mandatory Reporting of Domestic Violence to Law Enforcement and Criminal Justice Agencies

The American College of Emergency Physicians (ACEP) encourages emergency personnel to assess all patients for family violence in all its forms, including that directed toward children, elders, intimate partners, and other family members. Such patients should be appropriately referred for help and detailed evaluation. Identification and assessment can be difficult as violence and maltreatment can encompass abuse in many different forms including neglect, physical abuse, sexual abuse, emotional abuse, financial exploitation and intimidation.

ACEP opposes mandatory reporting of domestic violence to the criminal justice system. Instead, ACEP encourages partnering with and reporting of domestic violence to local social services, victims' services, the criminal justice system, or any other appropriate resource agency to provide confidential counseling and assistance, in accordance with the patient's wishes. Safety planning should be an important component of any screening process. In jurisdictions that have mandatory reporting requirements, persons reporting in good faith should be immune from liability for compliance.

ACEP recommends that:

- Emergency personnel assess patients for intimate partner violence, child and elder maltreatment and neglect.
- Emergency physicians, nurse practitioners, and physician assistants are familiar with signs and symptoms of intimate partner violence, child and elder maltreatment and neglect.
- Emergency medical services, medical schools, and emergency medicine residency curricula should include education and training in recognition, assessment and interventions in intimate partner violence, child and elder maltreatment and neglect.
- Hospitals and emergency departments (EDs) encourage research regarding the epidemiology of intimate partner violence, child and elder maltreatment and neglect as well as best practice approaches to screening, assessment and intervention for victims.
- Hospitals and EDs are encouraged to participate in collaborative interdisciplinary approaches for the screening, assessment, safety planning and intervention of victims of intimate partner violence, child and elder maltreatment and neglect. These approaches include the development of policies, protocols, and relationships with outside agencies that oversee the management and investigation of family violence.

- Hospitals and EDs should maintain appropriate education regarding state legal requirements for reporting intimate partner violence, child and elder maltreatment.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Drug Take Back Programs

Revised April 2022

Originally approved
June 2016

The American College of Emergency Physicians (ACEP) believes that development and implementation of drug take back programs for the safe disposal of unused controlled substances are an essential part of an effective approach to reducing the abuse of controlled substances. Further, ACEP believes that these programs should exist at no cost to patients and that there should be no legal sanctions against those who turn in unused controlled substances.

ACEP supports further research and implementation of innovations to support drug take back programs including novel drug disposal systems, text or web-based programs that prompt patients to dispose of unused drugs, and real time prescriber feedback to inform prescribers about how much drug was actually used.

ACEP supports community health innovations like the expansion of drug take back boxes into pharmacies and other healthcare settings and searchable databases to facilitate easy patient access to local, year-round drug-disposal locations.

ACEP generally supports legislative efforts to improve the drug take back infrastructure at the local, state, and federal level.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Due Process for Physician Medical Directors of Emergency Medical Services

Originally approved September 2018

The American College of Emergency Physicians (ACEP) considers Emergency Medical Services (EMS) a practice of medicine requiring physician oversight, reaffirms its commitment to physician medical director leadership in EMS, and supports the following principles:

- Physician medical directors in EMS systems who are practicing in accordance with the principles of responsible, ethical, evidence-based, patient-centered oversight of EMS systems must be afforded due process rights in their EMS oversight responsibilities or contracted services.

- Physician due process rights help to sustain and advance quality patient care and patient safety.

- The threat of termination or actual termination from EMS medical oversight services for physician medical directors in EMS systems without the right of a fair hearing prevents physician medical directors in EMS systems from fully advocating for patients for fear of retribution. Denial of due process rights for physician medical directors in EMS systems is a critical quality-of-care issue that negatively impacts patients.

- The right to due process is well established in the United States healthcare system, found in the Healthcare Quality Improvement Act of 1986 and affirmed in the 14th Amendment of the Constitution of the United States.

- Physician medical director in EMS contracts should include a due process clause. Employed or independently contracted physician medical directors in EMS systems should be protected from any clause in relevant contracts requiring that due process be waived unless the physician medical director is part of a group that chooses to terminate its group affiliation with the EMS system.

- ACEP encourages the Centers for Medicare and Medicaid Services (CMS) to guarantee due process rights for physician medical directors in EMS systems by making such rights un-waivable and irrevocable through the Medicare Conditions of Participation and other appropriate avenues.

- Employment due process protections subject to this policy are intended to be exclusive of due process procedures associated with hospital or other health care entity peer review policies and procedures.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Economic Credentialing

Revised January 2019

Reaffirmed June 2013, October 2007, and September 2001

Originally approved September 1997

The American College of Emergency Physicians (ACEP) is committed to high-quality, cost-effective care and recognizes the responsibility of emergency physicians to patients and society to employ prudent stewardship of health care resources. It is essential that the performance of emergency physicians not be judged solely on economic factors (cost of care/resource utilization) unrelated to quality of care. This practice would seriously undermine the independence of physician judgment in providing care that is in the patient's best interest.

ACEP supports granting and renewing medical staff/hospital privileges based on appropriate training and ongoing professional competency that is patient centric.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2017

Electronic Prescription Drug Monitoring Programs

Revised with current title January 2017

Originally approved titled "Electronic Prescription Monitoring" October 2011

The diversion of controlled substances from medical to non-medical purposes has become a significant public health problem. The American College of Emergency Physicians (ACEP) supports the use of electronic prescription drug monitoring programs (PDMP) and believes these systems should:

- Protect patient privacy.
- Not discourage a patient with a medical condition from seeking care.
- Support access to legitimate medical use of controlled substances.
- Ensure accurate, timely and complete data.
- Facilitate seamless data flow from the PDMP into the electronic health record for easy access by the provider (ideally for example, push systems).
- Be voluntary.
- Provide liability protection for the provider.
- Minimize burdensome requirements on the provider.
- Utilize a robust electronic monitoring system with intra-state linkages, easily accessible and navigable by providers seven days a week, twenty-four hours a day.
- Be limited to appropriate individuals and agencies including physicians and pharmacists and allow for an appropriately registered delegate to access the PDMP database as a surrogate for the prescribing provider.
- Not be used to evaluate a provider's practice.
- Allow providers to monitor their own prescribing patterns and to identify potential unauthorized use.

ACEP opposes mandatory reporting of potential abuse to law enforcement because such reporting fundamentally conflicts with the appropriate role of providers in the provider-patient relationship.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Emergency Department Nurse Staffing

Revised April 2022, October 2016

Reaffirmed September 2005

This policy statement was originally approved as a Board Motion titled "Nursing Shortage" in June 1988 and was approved as a policy statement in June 1999.

The American College of Emergency Physicians (ACEP) supports emergency department (ED) nurse staffing systems that provide adequate numbers of registered nurses who are trained and experienced in the practice of emergency nursing. Adequate nurse staffing levels should account for patient volume and acuity, the increased time demands of electronic medical record documentation, the number of patients boarding in the ED, patient/family education and care coordination. Nurse staffing should be evaluated on these factors in addition to experience and skill mix of the ED staff.

Contingency plans should provide additional nurse staffing for unanticipated emergency patient volume and/or acuity, and boarding of emergency patients awaiting community psychiatric, observation or inpatient bed placement. These plans may include the assignment of medical, surgical, and critical care nurses in addition to behavioral health personnel to the ED, as needed to care for patients boarded in the ED.

Emergency department staffing models should account for experience in emergency nursing as well as the proportion of ancillary personnel available to support the emergency nursing staff.

.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Emergency Department Observation Services

Revised June 2021

Reaffirmed October 2015

Revised January 2008, with current title October 1998, January 1993

Originally approved titled "Emergency Department Observation Units" September 1987

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "State of the Art: Observation Units in the Emergency Department"

Emergency department (ED) patients frequently require services beyond their initial ED care to determine the need for inpatient admission. These distinct and reimbursable services may include but are not limited to: further diagnostic evaluation, continued therapy or management of acute psycho-social issues.

To promote quality of care and patient safety for ED observation patients, the American College of Emergency Physicians (ACEP) supports the following principles:

- Observation of appropriate ED patients in a dedicated ED observation area, instead of a general inpatient bed or an acute care ED bed, is a "best practice" that requires a commitment of staff and hospital resources.
- Successful observation units include the availability of services that contribute to patient care and disposition. This includes:
  - Case management and social work
  - Physical therapy/Occupational therapy
  - Availability of consultants with a discrete expectation of turnaround time for evaluation
  - Consultations should be completed, as appropriate, via in-person or telehealth.
  - 24-hour access to radiology and interpretation of radiologic findings
  - Interdisciplinary collaboration with hospital services for protocols and clinical pathway development to participate in value-based purchasing programs, eg, CMS Hospital Readmissions Reduction Program
  - Availability of evidence-based clinical algorithms reflecting established and newly emerging clinical indications. Newer protocols may include those reflecting behavioral health observation, and placement needs (such as skilled nursing facility (SNF), acute rehab, hospice, and addiction services placement.)
- An emergency physician and emergency nurse should direct ED observation areas with clearly defined administrative responsibilities for the unit. A dedicated observation unit physician assistant or nurse practitioner should be directly supervised by an emergency physician.
- Direct patient care services or supervision may occur in-person or through telehealth.

- Written policies and procedures for the ED observation area should be approved by appropriate ED and hospital medical staff representatives.
- ED observation area policies and procedures should address the following:
  - Patient criteria for admission into the unit, discharge from the unit, and admission to an inpatient bed;
  - Criteria for placement of patients in the ED observation unit should not be based solely on InterQual or other third-party inpatient criteria;
  - A clear statement of which physician bears clinical responsibility for each patient in the area;
  - A clear delineation of emergency physician, nurse practitioner, physician assistant, and nursing staff roles and responsibilities throughout the day – including how care will be transferred between providers;
  - Circumstances that require notification of the physician who is responsible for the patient;
  - Maximum allowable length of stay in the unit and means to address outliers; and
  - A description of how utilization and relevant quality measures will be monitored and reported.
- ED observation areas should have adequate space, staffing, equipment, and supplies appropriate for the conditions being managed.
- Mechanisms should be in place to expedite the discharge, admission to an inpatient bed, or transfer to an offsite facility (such as skilled nursing, rehabilitation, or hospice facility) as appropriate.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Emergency Department Patient Navigator Role and Training

Revised October 2020 with current title

Originally approved June 2014 titled "Emergency Department Patient Advocate Role and Training"

The American College of Emergency Physicians (ACEP) supports the use of patient navigators in the emergency department (ED). If EDs choose to use patient navigators, there are a number of ways in which patient navigators can contribute to patient comfort, satisfaction, education and safety, including the following:

- Patient experience and comfort
- Patient complaints and compliments/service recovery
- Patient protection and advocacy services
- Discharge planning/readmission reduction
- Community health and support services referrals
- With proper knowledge and training, may provide resources and community-level support to patients and their families

ACEP recognizes that there are a variety of training programs, commensurate with responsibilities, to prepare individuals for patient navigator services in the ED. At a minimum, patient navigators in the ED should receive training in customer service and be able to effectively communicate the ED mission and flow process, in addition to training for specific job functions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Emergency Department Patient Rights and Responsibilities

Originally approved January 2024

The American College of Emergency Physicians (ACEP) believes that all emergency department (ED) patients should receive compassionate and quality emergency medical care. This Bill of Rights applies to every ED patient. The critical environment of the ED and patient capacity may require limitations of these rights.

Emergency department patients have the right to:

- quality emergency medical care
- receive a medical screening examination
- stabilization of emergency medical conditions
- respect and courtesy
- privacy and confidentiality
- participate in their own care, including shared decision making, informed consent, and advance care planning
- decline medical treatment
- be informed of the roles of physicians, nurses, and others involved in their care
- be free from discrimination, mental, physical, sexual, and verbal abuse, neglect, and exploitation
- receive reasonable accommodations for religious and cultural practices, disabilities, and language
- consent to or decline participation in research studies
- be informed of available resources for resolving disputes, grievances, and conflicts, such as ombudsman, ethics committees, or patient representatives

Emergency department patients have the responsibility to:

- act with courtesy and respect to staff, patients, and visitors
- participate in communication and decision making
- comply with reasonable medical care and perform self-care
- respect other patients' privacy and confidentiality
- respect boundaries set for safety by staff
- be respectful and considerate of other patients, staff, and property
- never exhibit threatening, violent, abusive, or discriminatory speech or behavior

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Emergency Department Planning and Resource Guidelines

Revised April 2021, April 2014, October 2007, and June 2004, June 2001 with current title

Reaffirmed September 1996

Revised June 1991

Originally approved December 1985 titled "Emergency Care Guidelines"

The purpose of this policy is to provide an evidence-supported outline of the resources and accommodations necessary to meet the typical emergency medical care needs for patients and the community at large.

Emergency departments (EDs)* should possess the staff and resources necessary to evaluate all individuals presenting to the ED. The ED should have the capabilities to provide or arrange treatment necessary to stabilize patients who are found to have an emergency medical condition. Because of the unscheduled and episodic nature of health emergencies and acute illnesses, experienced and qualified physician, nursing, and ancillary personnel should be continuously available to meet those needs.

The ED also provides care to individuals whose health needs could potentially be addressed in an alternate, non-emergent settings, but for whom ED may represent the only accessible or timely entry point into the broader health care system. Additionally, based on current legal standards, as provided under the Emergency Medical Treatment and Labor Act (EMTALA), the ED is mandated to provide evaluation to any person who believes they have an emergency condition. Therefore, it is imperative that the ED remains appropriately equipped to serve this purpose.

The American College of Emergency Physicians (ACEP) believes that:

- Emergency medical care should be available to all members of the public.
- Access to appropriate emergency medical care should be unrestricted.
- A smooth continuum should exist amongst prehospital, emergency, and definitive or longitudinal care (inpatient and/or outpatient).
- Evaluation, management, and treatment of patients should be appropriate and expedient.
- Resources should exist in the ED to accommodate each patient from the time of arrival through evaluation, treatment, and disposition.
- The emergency physician should serve as the leader of the ED team.

* These guidelines are intended to apply to either hospital-based or free-standing emergency departments open 24 hours a day.

- This team may consist of nurse practitioners (NPs), physician assistants (PAs), emergency nurses, ED technicians, and other ancillary staff that make up the core components of the emergency medical care system. The ED personnel should establish effective working relationships with others who provide health care, and entities with whom they interact. These may include, but are not limited to, emergency medical services (EMS) professionals, ancillary hospital staff, other physicians, as well as other health care and social service resources.

I. Resources and Planning

A. Responsibilities and Public Expectations

1. The ED should be emergency physician led and staffed by qualified personnel with knowledge and skills sufficient to evaluate and manage those who seek emergency care. The EDs should be designed and equipped to facilitate this work.
2. Timely emergency care provided by an emergency physician and ED staff should be continuously available 24 hours per day, seven days per week, 365 days per year.
3. Patient evaluation and stabilization in the ED should be provided to everyone who presents for emergency care, consistent with EMTALA guidelines.
4. Consistent with applicable standards and regulations, the patient or applicable guarantor is financially responsible for the charges incurred in the course of emergency care.
5. The EDs should participate in an active public education program that details the intended scope of services provided at the facility.
6. The EDs should support existing EMS systems and provide medical direction where appropriate.

B. Minimum Standards

This section of the guidelines outlines elements of administration, staffing, design, and materials needed for the delivery of emergency care.

1. **Leadership and Administration**
   a. The ED should be organized and administered to meet the health care needs of its patient population.
   b. Operation of the ED should be guided by written policies and procedures.
   c. The ED should have a designated medical director. The ED medical director[†], in collaboration with the director of emergency nursing and with appropriate integration of other ancillary services, should ensure that quality, safety, and appropriateness of emergency care are continuously monitored and evaluated. The ED medical director should have oversight over all aspects of the practice of emergency medicine in the ED.
   d. All staff members working in the ED should receive a formal orientation that addresses the mission of the institution, ED standard policy and operating procedures, and the responsibilities of each member of the ED staff. The duties and responsibilities of the ED physician and staff should be defined in writing.
   e. ED physicians, NPs and PAs should maintain and enhance their professional knowledge and skills, with the goal of providing optimal care to patients.
   f. An ED quality assurance program should provide for the evaluation and monitoring of each member of the ED team at regular intervals
   g. In accordance with applicable laws, regulations, and standards, the triage and screening of each patient who enters the ED seeking medical care should be performed by a physician,

or by a specially trained registered nurse, NP, or PA. Policy guidelines should be developed collaboratively by the medical director of emergency services and the director of emergency nursing.

h. Immediate evaluation, treatment, and stabilization, to the degree reasonably possible, should be available for each patient who presents to the ED with an emergency medical condition.
i. The emergency physician is responsible for the medical care provided in the ED. This includes the medical evaluation, diagnosis, and recommended treatment and disposition of the emergency patient, as well as the direction and coordination of all other care provided to the patient. Medical care responsibility for a particular patient in the ED may be transferred to another physician if said responsibility has been assumed unambiguously. A registered nurse is responsible for the nursing care of each emergency patient to include assessment, planning, and evaluation of response to interventions.
j. The ED should maintain a control register or "log" identifying each individual who presents to the facility seeking emergency care. A legible and appropriate medical record should be established for every individual who present for emergency care. This record should be retained as required by law and should remain promptly available to the emergency staff when needed. An electronic health/medical record that captures and records this data is encouraged.

[†]Where appropriate in this document, the term "chair, or chief, of the department of emergency medicine" may be substituted for the title "medical director of the emergency department."

2. Staffing

a. Appropriately educated and qualified emergency physicians, NPs, PAs, registered nurses and ancillary staff should staff the ED during all hours of operation.
b. The ED director should direct the medical care provided in the ED. The medical director of the ED should:
   - Be certified by the American Board of Emergency Medicine (ABEM), the American Osteopathic Board of Emergency Medicine (AOBEM) or should possess comparable qualifications as established through the privilege delineation policy.
   - Possess competence in management and administration of the clinical services available in the ED.
   - Be a voting member of the executive committee of the hospital's medical staff.
   - Be knowledgeable about EMS operations and the regional EMS network.
   - Be responsible for assessing and making recommendations to the hospital's credentialing body related to the qualifications of emergency physicians with respect to the clinical privileges granted ~~to~~ them.
   - Ensure that the emergency staff is appropriately qualified and credentialed.
c. All physicians who staff the ED, including the medical director, should be subject to the hospital's customary credentialing process and should be members of the hospital medical staff with clinical privileges applicable to ~~in~~ emergency medicine. Emergency physicians should have the same rights and privileges as other members of the medical staff.
d. Each physician should be individually credentialed by the hospital medical staff department in accordance with criteria contained in ACEP's policy on physician credentialing. All emergency physicians who practice in the ED should possess training, experience, and competence in emergency medicine sufficient to evaluate and manage and treat patients who seek emergency medical care, consistent with the physician's delineated clinical

privileges. patients who seek emergency care, consistent with the physician's delineated clinical privileges.

e. The nursing care provided in the ED shall be directed by a registered nurse. The director of emergency nursing services should:
   - Demonstrate evidence of substantial education, experience, and competence in emergency nursing. The Certified Emergency Nurse (CEN) credential is an excellent benchmark.
   - Show evidence of competence in management and administration of the clinical services in an ED.
   - Ensure that the nursing and support staff are appropriately educated and qualified.

f. Each nurse working in the ED should:
   - Provide evidence of adequate previous ED or critical care experience or have completed an emergency care education program. The CEN credential is an excellent benchmark.
   - Demonstrate evidence of the knowledge and skills necessary to deliver nursing care in accordance with the Standards of Emergency Nursing Practice.

g. The medical director of the ED and the director of emergency nursing should assess staffing needs on a regular basis. Patient census, injury/illness severity, arrival time, and availability of ancillary services and support staff are factors to be considered in the evaluation of emergency scheduling and staffing needs. Staffing patterns should accommodate the potential for the unexpected arrival of additional critically ill or injured patients. A plan should exist for the provision of additional nursing, physician assistant, advanced practice registered nurse, and physician support in times of disaster, natural or man-made.

3. Facility

a. The ED should be designed to provide a safe environment in which to render care and should enable convenient access for all individuals who present for care. Adequate provisions for the safety of the ED staff, patients, and visitors should be designed and implemented.

b. The ED should be designed to protect, to the maximum extent reasonably possible consistent with medical necessity, the right of the patient to visual and auditory privacy.

c. Radiological, imaging, and other diagnostic services such as those outlined in Appendix A should be available within a reasonable period of time for individuals who require these services.

d. Laboratory services such as those outlined in Appendix D should be available within a reasonable period of time for the provision of appropriate diagnostic tests for patients who require these services.

e. Signage consistent with the federal and/or state regulations should indicate the direction of the ED from major thoroughfares and whether the facility is designated as a specialized emergency care center.

f. In accordance with regulations, translation and communication capabilities should exist for foreign languages and for the vision and/or hearing impaired.

4. Equipment and Supplies

a. Equipment and supplies should be of high quality and should be appropriate to the reasonable needs of all patients presenting to the ED.

b. Equipment and supplies such as those outlined in Appendix A should be immediately available in the facility at all times.

c. Evidence of the proper functioning of all reusable direct patient care medical equipment should be documented at regular intervals.
d. The ED should be furnished with the equipment, materials, and technology required for the functioning of a modern office. The work environment should meet standards put forth by the Occupational Safety and Health Administration (OSHA).

5. Pharmacologic/Therapeutic Drugs and Agents

Necessary drugs and agents such as those outlined in Appendix 2 should be immediately available. A mechanism should exist to identify and replace all drugs before their expiration dates.

6. Ancillary Services*

a. Laboratory
b. Radiology
c. Anesthesia
d. Respiratory therapy
e. Electrocardiography
f. Pharmacy
g. Patient transport
h. Patient advocate services
i. Physical therapy
j. Social work chaplain
k. Phlebotomy
l. Security

*Some of these services may not be applicable to freestanding EDs

C. Relationships and Responsibilities

Emergency care begins in the prehospital setting, continues in the ED, and concludes when responsibility for the patient is transferred to another physician or care team, or the patient is discharged. To promote optimal care of emergency patients, this transfer of responsibility should be accomplished in an effective, orderly, and predictable manner. This section describes the relationships that should exist between facilities and those who provide health care for proper continuity of care.

1. Prehospital Setting

a. Prehospital emergency care should be provided consistent with the ACEP policy, "The Role of the Physician Medical Director in Emergency Medical Services Leadership."
b. The ED should be a designated part of the EMS and community disaster plans and should have roles defined by the local EMS/disaster coordinating body. Protocols and procedures should be in place that define the ED's interface with the EMS system.
c. Patients should be transported to the nearest appropriate ED in accordance with applicable laws, regulations, and guidelines.
d. When ambulance services are used to transport patients to the ED, a communication system such as a two-way radio, cellular phone, or other appropriate means should be available to provide notice of arrival or advance information concerning critically ill or injured patients.
e. Transport personnel should provide complete written or electronic clinical documentation of all prehospital care provided to the patient. A copy of the document should be

immediately available on transfer of care to the ED staff and should be included in the patient's permanent medical record.

2. Emergency Facility

a. ED personnel should be familiar with medical care protocols used by those providing prehospital care-in their community.
b. All individuals with potentially lethal or disabling illnesses or injuries or other potential emergency medical conditions who present or are brought to the facility should be evaluated promptly. Appropriate measures should be initiated to stabilize and manage these patients.

3. Patient Disposition

a. Appropriately qualified physicians who will accept responsibility for the care of patients should be identified in advance by the hospital and its medical staff for patients requiring admission or transfer to an inpatient bed or observation/holding unit. Consistent with applicable laws and regulations, the hospital and its medical staff should provide to the ED a list of appropriate "on-call" specialists who are required to respond to assist in the care of emergency patients within reasonable established time limits.
b. Patients admitted or transferred to an observation/holding unit should be managed in a manner consistent with guidelines specified in ACEP's related policies.
c. Transfer of care should be coordinated by the ED physician and the ED nurse, whether the patient is to be admitted to the hospital, transferred to a higher level of care, or discharged. If admitted or transferred there should exist policies and procedures to facilitate safe transfer of care between physicians and care teams. Appropriately qualified physicians or other appropriate and qualified health care who will accept follow-up responsibility for patients discharged from the ED should be identified in advance by the hospital and its medical staff. The hospital and its medical staff should provide the ED with a list of appropriate on-call specialists or other appropriate referral services who will render follow-up services to ED patients within a reasonable period of time after discharge.
d. All patients discharged or transferred from an ED should have specific, printed, or legibly written aftercare instructions. It should also be confirmed that the patient is reasonably able to read and understand these instructions.

4. Transfer

a. When patient transfer is indicated, the emergency facility should have a written plan for transferring patients in a vehicle with appropriate patient care capabilities including life support (eg, ambulance, advanced life support, basic life support, fixed-wing, and rotor). When necessary, means should be available to provide nursing or physician staffing of transfer vehicles. In the appropriate clinical setting, family may provide transport for patients in private vehicles. Medical records necessary for ongoing care should accompany the patient; if these are not available at the time of transfer, they should be expeditiously provided to the receiving facility (eg, by fax transmission or other electronic transmission) in accordance with EMTALA.
b. Patients with potentially lethal or disabling conditions or other emergency medical conditions should not be transferred from an emergency facility unless appropriate evaluation and stabilization procedures have been initiated within the capability of the facility. Transfer of patients to a facility with greater capability and resources should be arranged as necessary.
c. All transfers should comply with local, state, and federal laws and be consistent with ACEP policies related to patient transfer.

Appendix A - SUGGESTED EQUIPMENT AND SUPPLIES FOR EDs

Each of the items should be located in or immediately available to the area noted. This list does not include routine medical/surgical supplies such as adhesive bandages, gauze pads, and suture material. Nor does it include routine office items such as paper, desks, paper clips, and chairs.

Entire Department

- Central station monitoring capability
- Appropriate physiological monitors, including but not limited to temperature, blood pressure, heart rate, blood oxygen saturation
- Defibrillator with monitor and power source
- Nurse-call system for patient use
- Supplies for venipuncture and blood cultures
- Supplies for administration of IV therapies
- Portable suction regulator
- Infusion pumps including blood infusion pumps
- IV poles
- Bag-valve-mask respiratory and adult and pediatric size mask
- Portable oxygen tanks and oxygen supply
- Blood/fluid warmer and tubing
- Nasogastric suction supplies
- Nebulizer
- Gastric lavage supplies, including large-lumen tubes and bite blocks
- Urinary catheters, including but not limited to straight catheters, Foley catheters, Coude catheters, filiforms and followers, and appropriate means for urine sample collection ŧ
- Intraosseous needles and placement equipment
- Lumbar puncture sets
- Blanket warmer
- Tonometer
- Slit lamp
- Wheelchairs and other appropriate mobility devices and transfer-assist devices
- Medication dispensing system with locking capabilities
- Sterile separately wrapped instruments (specifics will vary by department)
- Weight scales (adult and infant)
- Pediatric treatment and dosing table (pediatric emergency tape)
- Ear irrigation and cerumen removal equipment
- Vascular Doppler
- Anoscope
- Adult and pediatric “code” cart
- Suture or minor surgical procedure sets (generic)
- Portable sonogram equipment
- EKG machine
- Point of care testing
- Influenza swabs
- Other necessary infection-related swabs or assays
- X-ray viewing capabilities

- Secure, modern and reliable computer system with access to electronic health/medical record
- High-speed, reliable and secure internet connection
- Patient tracking system
- Radio or other means for reliable communication with prehospital care providers
- Patient discharge instruction system
- Patient registration system/information services
- Inter- and intradepartmental staff communication system - pagers, mobile phones
- ED charting system for physician, nursing, and attending physician documentation equipment
- Reference materials including toxicology resource information
- Appropriate personal protective equipment based on recommendations from the Centers for Disease Control and Prevention or other infectious disease authorities.
- Linen (eg. pillows, towels, wash cloths, gowns, blankets)
- Patient belongings or clothing bag with secure means of temporary storage
- Security needs including, but not limited to, personal restraints, wand-type or free-standing metal detectors as indicated
- Equipment for adequate housekeeping

General Examination Rooms

- Examination tables or stretchers appropriate to the area (for any area in which seriously ill patients are managed, a stretcher with capability for changes in position, attached IV poles, and a holder for portable oxygen tank should be used). Equipment to perform pelvic exams.
- Step stool
- Chair/stool for emergency staff
- Seating for family members or visitors
- Adequate lighting, including procedure lights as indicated
- Adequate sinks for hand-washing, including dispensers for germicidal soap and paper towels
- Wall mounted oxygen supplies and equipment, including nasal cannulas, face masks, and venturi masks.
- Wall mounted suction capability, including both tracheal cannulas and larger cannulas
- Wall-mounted or portable otoscope/ophthalmoscope
- Sphygmomanometer/stethoscope
- Biohazard-disposal receptacles, including for sharps
- Garbage receptacles for non-contaminated materials

Resuscitation Room

All items listed for general examination rooms plus:

- Access to adult and pediatric “code cart” to include appropriate medication charts
- Capability for direct communication with nursing station, preferably hands free
- Radiography equipment
- Portable ultrasound
- Radiographic viewing capabilities
- Airways needs
  - Bag-valve-mask respirator (adult, pediatric, and infant)
  - Cricothyroidotomy instruments and supplies
  - Endotracheal tubes, size 2.5 to 8.5 mm

  - Fiberoptic laryngoscope, video laryngoscope or alternative rescue intubation equipment
  - Laryngoscopes, straight and curved blades and stylets
  - Laryngoscopic mirror and supplies
  - Laryngeal Mask Airway (LMA)
  - Oral and nasal airways
  - Tracheostomy instrument and supplies
- Breathing
  - Noninvasive Ventilation System (BIPAP/CPAP)
  - Closed-chest drainage device
  - Chest tube instruments and supplies
  - Emergency thoracotomy instruments and supplies
  - End-tidal CO2 monitor
  - Nebulizer
  - Peak flow meter
  - Pulse oximetry
  - Volume cycle ventilator
- Circulation
  - Automatic physiological monitor, noninvasive
  - Blood/fluid infusion pumps and tubing
  - Cardiac compression board
  - Central venous catheter setups/kits
  - Central venous pressure monitoring equipment
  - Cutdown instruments and supplies
  - Intraosseous needles
  - IV catheters, sets, tubing, poles
  - Monitor/defibrillator with pediatric paddles, internal paddles, appropriate pads and other supplies
  - Pericardiocentesis instruments
  - Rapid infusion equipment
  - Temporary external pacemaker
  - Transvenous and/or transthoracic pacemaker setup and supplies
  - 12-Lead ECG machine

Trauma and Miscellaneous Resuscitation

- Blood salvage/autotransfusion device
- Emergency obstetric instruments and supplies
- Hypothermia thermometer
- Infant warming equipment
- Peritoneal lavage instruments and supplies
- Spine stabilization equipment to include cervical collars, short and long boards
- Therapeutic hypothermia modalities
- Warming/cooling blanket

Other Special Rooms

All items listed for general examination rooms plus:
- Orthopedic
  - Cast cutter
  - Cast and splint application supplies and equipment

- Crutches
- Extremity splinting and stabilization devices
- Radiographic viewing capabilities
- Traction equipment, including hanging weights and finger traps

- Eye/ENT
  - Eye chart
  - Ophthalmic tonometry device (applanation, Schiotz, or other)
  - Other ophthalmic supplies as indicated, including eye spud, rust ring remover, cobalt blue light
  - Slit lamp
  - Ear irrigation and cerumen removal equipment
  - Epistaxis instrument and supplies, including balloon posterior packs
  - Frazier suction tips
  - Headlight
  - Laryngoscopic mirror
  - Plastic suture instruments and supplies
- OB-GYN
  - Fetal Doppler and ultrasound equipment
  - Obstetrics/gynecology examination light
  - Vaginal specula in various sizes
  - Sexual assault evidence-collection kits (as appropriate)
  - Access to baby warmer

Appendix B - SUGGESTED PHARMACOLOGICAL/THERAPEUTIC DRUGS FOR EDs

These classes of drugs and agents are only suggested and will evolve as new therapies become available. The medical director of the ED and a pharmacy representative should develop a formulary of specific agents for use in an individual hospital's ED. These items should be readily available, or arrangements should be in place to access them if not available in the ED.

Analgesics
  Narcotic and non-narcotic
Anesthetics
  Topical, infiltrative, general
Anticonvulsants
Antidiabetic agents
Antidotes
  Antivenins
Antihistamines
Anti-infective agents
  Systemic/topical/post-exposure prophylaxis
Anti-inflammatories
  Steroidal/non-steroidal
Antipyretics

Bicarbonates
Blood Modifiers
  Anticoagulants, including thrombolytics
  Hemostatics
  Systemic
  Topical
  Plasma expanders/ extenders
Burn Preparations
Cardiovascular agents
  ACE inhibitors
  Adernergic blockers
  Adernergic stimulants
  Alpha/Beta blockers
  Antiarrhythmia agents
  Calcium channel blockers
  Digoxin antagonist
  Diuretics
  Vasodilators
  Vasopressors
Cholinesterase Inhibitors

Diagnostic agents
  Blood contents

Stool contents
Urine contents

Electrolytes
Cation exchange resin
Electrolyte replacements, parenteral and oral
Fluid replacement solutions
Medications to reverse electrolyte derangements

Gastrointestinal agents
Antacids
Anti-diarrheals
Emetics and Anti-emetics
Anti-flatulent
Anti-spasmodics
Bowel evacuants/laxatives
Histamine receptor antagonists
Proton pump inhibitors
Glucose elevating agents

Hormonal agents
Oral contraceptives
Steroid preparations
Thyroid preparations
Hypocalcemia and hypercalcemia management agents

Lubricants

Migraine preparations
Muscle relaxants

Narcotic antagonist
Nasal preparation
Neuromuscular blocking agents

Ophthalmologic preparations
Otic preparations
Oxytocin and tocolytics

Psychotherapeutic agents

Respiratory agents
Antitussives
Bronchodilators
Decongestants
Leukotriene antagonist
Rh_0(D) immune globulin

Salicylates
Sedatives and Hypnotics

Vaccinations
Vitamins and minerals

Appendix C - RADIOLOGIC, IMAGING, AND OTHER DIAGNOSTIC SERVICES

The specific services available and the timeliness of availability of these services for emergency patients in an individual hospital's ED should be determined by the medical director of the ED in collaboration with the directors of the diagnostic services and other appropriate individuals.

The following should be readily available 24 hours a day for emergency patients:

- Standard radiologic studies of bony and soft-tissue structures
- Emergency ultrasound services for the diagnosis of obstetric/gynecologic, cardiac and hemodynamic problems and other urgent conditions.
- Cardiovascular services
  - Doppler studies
  - 12-Lead ECGs and rhythm strips
- Computed tomography
- Pulmonary services
  - Arterial blood gas determination
  - CO oximetry
  - Peak flow determination
  - Pulse oximetry

  - Venous blood gasses
- Fetal monitoring (nonstress test)/uterine monitoring in applicable facilities

The following services should be available on an urgent basis, provided by staff in the hospital or by staff to be called in to respond within a reasonable period of time:

- Nuclear medicine
- Radiographic
  - Arteriography/venography
  - Dye-contrast studies (intravenous pyelography, gastrointestinal contrast, etc.)
  - Magnetic resonance imaging services or the ability to arrange for urgent MRI
- Vascular/flow studies including impedance plethysmography

Appendix D - SUGGESTED LABORATORY CAPABILITIES

The medical director of the ED and the director of laboratory services should develop guidelines for availability and timeliness of services for an individual hospital's ED. The following laboratory capabilities are suggested for hospitals with 24-hour EDs. This list may not be comprehensive or complete. Point-of-care testing may be available for many of the below listed tests and may facilitate timely results.

Blood Bank
- Bank products availability
- Type and cross-matching capabilities

Chemistry
- Ammonia
- Amylase
- Anticonvulsant and other therapeutic drug levels
- Arterial blood gases
- Bilirubin (total and direct)
- B-type natriuretic peptide (BNP)
- Calcium
- Carboxyhemoglobin
- Cardiac enzymes
- Creatinine
- Electrolytes (blood, CSF, and urine)
- Ethanol
- Glucose (blood and CSF)
- Lactate
- Lipase
- Liver-function enzymes (ALT, AST, alkaline phosphatase)
- Methemoglobin
- Osmolality
- Protein (CSF)
- Serum magnesium
- Urea nitrogen

Hematology
- Cell count and differential (blood, CSF, joint and other body fluid analysis)
- Coagulation studies
- Erythrocyte sedimentation rate
- Platelet count
- Reticulocyte count
- Sickle cell prep

Microbiology

- Acid fast smear/staining
- Chlamydia and gonorrhea testing
- Counterimmune electrophoresis for bacterial identification
- Gram staining and culture/sensitivities
- Herpes testing
- Rapid viral testing (COVID, Influenza, etc.)
- Strep screening
- Viral culture
- Wright stain

Other
- Hepatitis screening
- HIV screening
- CSF, joint and other body fluid analysis
- Mononucleosis spot
- Serology (syphilis, recombinant immunoassay)
- Pregnancy testing (qualitative and quantitative
- Toxicology screening and drug levels
  Urinalysis

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Emergency Department Ultrasound Privilege and Practice

Revised April 2023 with current title

Originally approved June 2017 titled "Advocacy for Emergency Department Ultrasound Privilege and Practice"

ACEP believes hospitals should consider emergency ultrasound as standard care in emergency medicine across emergency departments in the United States. ACEP additionally recognizes that the scope and utilization of ultrasound has greatly increased to where it is now an essential tool to the emergency physician.

Emergency ultrasound enables emergency physicians to diagnose, resuscitate, safely perform procedures, monitor, and treat at the bedside.

The American Medical Association approved a policy in 1998 that acknowledges the diverse use and application of ultrasound in medical practice and that ultrasound is within the scope of practice of appropriately trained physicians. Initial training and credentialing has become standardized among emergency medicine residency programs, with training criteria as defined by ACEP ultrasound guidelines. As such, emergency ultrasound is within the scope of practice for an emergency physician (as defined by the ACEP policies and ACEP ultrasound guidelines) and should not require any additional training or certification to become credentialed within a hospital or hospital system.

Hospitals and hospital systems should not engage in the use of any exclusive institution-wide imaging contracts that restrict the use of emergency ultrasound. Hospitals should also consider ultrasound machines to be standard equipment for the emergency department and should provide and maintain dedicated ultrasound machines as they would for any other essential equipment. As with other healthcare services, emergency ultrasound should be reimbursed at fair market value, and the billing of these studies should not be restricted by exclusive imaging contracts on an institutional level.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Emergency Department Utilization During Respiratory Disease Outbreaks

Revised October 2023 with current title, June 2017, April 2011

Originally approved November 2004 titled "Emergency Department Utilization During Outbreaks of Influenza"

The American College of Emergency Physicians (ACEP) recommends close coordination between emergency physicians, health care facilities, and public health entities to educate the public regarding appropriate physician referrals and emergency department (ED) utilization during outbreaks of respiratory infectious diseases.

To meet this goal, the following steps are recommended to mitigate the impact of respiratory infectious disease outbreaks:

1. Ensure that emergency physicians and other direct patient facing emergency care personnel are current in their Centers for Disease Control and Prevention (CDC) recommended immunizations and have access to and use appropriate personal protective equipment (PPE) during patient care.
2. Implement rapid screening and appropriate respiratory infection prevention and control measures (eg, masking, isolation) for symptomatic individuals presenting to the ED.
3. Develop and implement regional, local, and hospital surge plans to avoid unsafe overcrowding and end the dangerous practice of boarding patients in the ED. Hospitals operating at full capacity may be required to distribute boarded patients who do not require respiratory isolation to inpatient hallways, short stay units, and other spaces outside the ED.
4. Enhance multi-directional communications networks to provide real-time guidance to emergency clinicians regarding both seasonal and sentinel disease outbreaks to include epidemiologic information (eg, outbreak notification, syndromic surveillance) as well as diagnostic and treatment recommendations.
5. Advocate for the legal protection of emergency clinicians providing crisis care in dangerously overcrowded and resource-poor settings as in the event of a large-scale infectious disease outbreak.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Emergency Medical Services Interfaces with Health Care Systems

Originally approved February 2018, replacing the following rescinded policy statements:

- Ambulance Diversion (1991-2018)
- Emergency Ambulance Destination (1983-2018)
- EMS Regionalization of Care (2013-2018)
- Interfacility Transportation of the Critical Care Patient and Its Medical Direction (1999-2018)

The American College of Emergency Physicians (ACEP) believes that Emergency Medical Services (EMS) constitute an integral component in the continuum of acute medical care, and supports the following principles:

- EMS plays an essential role in the clinically effective, fiscally responsible regionalization of healthcare, providing acute medical assessment and interventional care contemporaneous with navigation of patients. Patients, particularly those with time-critical conditions, are best served in geographically appropriate health care facilities having the specialized capabilities and services, either on site or via appropriate communications modalities, required for their evidence-based, optimal clinical outcomes. Appropriate funding of coordinated continuum of care systems (eg. trauma systems) is essential to promoting the availability of regionalization of healthcare.

- EMS systems must have significant involvement, funding, and leadership decision-making authority in any regionalized system of healthcare to best provide necessary out-of-hospital acute assessment and care to patients, including safe, timely navigation of patients.

- EMS destination protocols must be constructed with the substantive leadership of the EMS system's physician medical director(s), always based primarily upon evidence-based clinical rationale, factoring geographical operational realities.

- Healthcare facility requests for diversion of EMS transported patients are requests, not legal requirements, for EMS professionals operating with the leadership of the EMS system's physician medical director. Diversion requests should be kept to minimums in frequency and duration. Diversion request parameters that can be honored clinically and/or operationally are to be established by the EMS system's physician medical director(s). Of particular note, hospitals should not seek or expect relief from inpatient census spikes and/or inpatient movement inefficiencies by requesting diversion of EMS transported patients.

- Healthcare facility requests for diversion of EMS transported patients must be weighed against the capabilities and needs of the geographically applicable served area. In situations where a multitude of area hospitals are experiencing overload, the EMS physician medical director(s) may determine that all hospitals are "open" to EMS transported patients to avoid disproportionate burden on remaining hospitals also at or near capacity. In situations where a hospital is the unique provider of specialized clinical service(s) for a geographically applicable served area, the EMS physician medical director(s) may determine that such hospital remains "open" to EMS transported patients requiring such unique, specialized clinical service(s).

- Acute care to acute care or longer-term care interfacility EMS transportation of a patient represents an important component in that patient's treatment plan. Careful consideration must be given to the patient's present clinical care needs, factoring ongoing needs and those that could reasonably, potentially arise during the time of interfacility transport. Appropriate clinical personnel, assessment equipment, and treatment equipment are to accompany the patient in the clinically appropriate transport vehicle(s) involved in any interfacility transport.

- During an acute care to acute care or longer-term care interfacility EMS transport, the patient's transferring physician ultimately bears the responsibilities for patient assessment in timely proximity to the transport, determining the clinically appropriate level and modality of the transport, securing legally appropriate acceptance of care for the patient at the destination healthcare facility, and communicating the salient details of the patient's condition and care plan, with both transport personnel and receiving physician(s). Transferring physicians are highly encouraged to consult with a physician medical director of the EMS system(s) intended to be involved in the patient's interfacility transport when considering necessary level of care during transport and the modality of transport (eg, ground or air rotor wing).

- During an acute care to acute care or longer-term care interfacility EMS transport, the patient's receiving physician ultimately bears the responsibilities for accepting the patient they agreed to accept.

- During an acute care to acute care or longer-term interfacility EMS transport, the physician medical director(s) for the involved interfacility transport professionals ultimately bear(s) the responsibility to establish, maintain, and update necessary treatment protocols to promote the optimal provision of expected usual and customary interfacility transport care. Often, specialized critical care needs may be encountered in the interfacility transportation of patients. Physician medical director(s) of interfacility transportation services may choose to involve other specialty and subspecialty physicians in the crafting of clinical treatment protocols and/or in providing on-line medical consult services during transports.

- All EMS transports of patients should include the exchange of clinically relevant information, in oral and/or written formats as conditions warrant. Formal written documentation of provided care must be supplied to subsequently treating clinicians in clinically relevant timeframes.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2022

Emergency Medicine Telehealth

Revised September 2022, February 2020 with current title

Originally approved January 2016 titled "Emergency Medicine Telemedicine"

The use of telehealth is increasing throughout the United States, and emergency physicians are uniquely suited to the provision of acute unscheduled telehealth care. This policy statement addresses many of the current issues regarding telehealth in the emergency medicine setting.

Tel-emergency care is the process of remotely caring for patients with acute illness, injury, and exacerbations of chronic diseases, including the initial evaluation diagnosis, treatment, prevention, coordination of care, disposition, and public health impact of any patient requiring expeditious care irrespective of a prior relationship and clinical environment. Emergency physicians are uniquely suited to this practice based on training, team-based approach, innovative mindset, and national credibility. Telehealth eliminates distance and cost barriers, improving access to medical services that would otherwise not be consistently available or affordable while maintaining quality and improving outcomes.

Credentialing and Licensing

The American College of Emergency Physicians (ACEP) supports development of interstate medical licenses, which would be offered based on reciprocity among the states. As interstate licenses evolve, ACEP further supports the development of uniform rules governing the practice of medicine, physician discipline, and laws concerning malpractice throughout the United States to provide uniform, safe, and quality urgent and emergent patient care.

ACEP believes that all tel-emergency physicians should abide by the same local and regional credentialing policies and meet all qualifications of licensure, board eligibility, and certification required as mandated by state and federal law. Many community hospitals already provide telehealth emergency physicians with reciprocal credentialing as recognized by the Centers for Medicare and Medicaid Services (CMS) with deeming authority.

The scope of care provided should be consistent with the clinician's level of training (eg, MD/DO, ARNP, PA-C, RN, etc.). Oversight requirements and auditing standards applicable to face-to-face clinical encounters may be applied to telehealth visits. Where telehealth laws require or permit different requirements, compliance should be maintained with those provisions.

Establishing a Physician-Patient Relationship

ACEP understands that a physician-patient relationship can be established in many ways. In simple terms, a physician-patient relationship is established by mutual agreement between a physician and a patient to collaborate on the patient's health care. For the purpose of telehealth in an acute unscheduled setting, this collaboration should occur in real-time, should be interactive, and should meet the following minimum criteria:

1. The identity of the patient as well as the patient's physical location at the time of service should be verified.
2. Patients should be introduced to the physician caring for them and provided with the physician's applicable credentials.
3. Consent for the delivery of telehealth, including limitations of care that may be provided remotely, should be documented. Any additional consent for use of specific telehealth technologies should also be obtained (consent for photo, video, text alerts, etc.).
4. Documentation of the patient encounter should meet the same standards as a traditional in-person encounter to maintain a complete and legible medical record that is available to the patient and other medical personnel as needed. This documentation may include:
    a. A reliable medical history, which may include past medical history, history of present illness, review of systems, current medications and allergies, if applicable.
    b. An appropriate and adequate examination to establish a diagnosis or underlying condition. The technology must be adequate to enable a telehealth encounter that would allow the practitioner to effectively treat and diagnose the patient.
    c. A plan of care that includes discussion with the patient about various treatment options and the risks and benefits of any recommended treatments.
5. The treating physician must agree to oversee the prescription of any prescribed medications.
6. Appropriate follow-up care for the patient should be suggested and guidelines established for referral to a higher level of care when needed.
7. Complete and legible medical records are available to patients and other medical personnel.
8. Treating physicians must practice within the scope of their specialty and usual clinical practice.

Informing and Educating the Patient

ACEP believes that prior to the initiation of a telehealth encounter, the emergency physician or designee should inform and educate the patient (either in writing or verbally) about telehealth service compared to in-person care. This should include discussion of the nature of a telehealth encounter, timing of service, record keeping, scheduling, privacy and security, potential risks, mandatory reporting, the credentials of the distant site emergency physician, and billing arrangements. The information should be provided in simple language that can be easily understood by the patient. This is particularly important when discussing technical issues like encryption or the potential for technical failure.

The emergency physician or designee should set appropriate expectations regarding the telehealth encounter, including, but not limited to the scope of service, communication, and follow-up.

Patient Choice of Telehealth Physician

ACEP supports patient choices in the selection of a telehealth physician, but with the understanding that by the nature of emergencies and hospital credentialing practices, a choice may not be available, as is also true of in-person staffing in emergency departments.

Fair Compensation

Telehealth services enable care and expertise to be provided to patients in locations where needed specialty

and emergency care are not otherwise accessible because of cost, resources, or lack of availability. ACEP believes that telehealth services, like other health care services, should be reimbursed.

Internet Prescribing

ACEP supports internet prescribing as long as the following criteria are met:

1. A proper physician-patient relationship has been established.
2. The patient encounter is appropriately documented, including patient history and evaluation that adequately supports a diagnosis, development of a clinically appropriate treatment plan, and justification for the medication prescribed. A record of medications prescribed should be included in the patient's medical record. The treating physician must also agree to supervise the prescription of medications, and the patient must have access to follow-up with in-person care, as needed.
3. The treating physician performs a technology-assisted physical examination.
4. The physical examination is documented, and the patient's record reflects findings that would be sufficient to meet typical documentation standards.
5. Patient evaluation is held to the same standard as a traditional encounter.
6. State and federal laws regarding controlled and scheduled medications are followed.

ACEP does not support internet-prescribing based solely on internet or electronic medical questionnaires without real-time interactive engagement between the physician and patient.

Supervision of Nurse Practitioners and Physician Assistants

Physician assistants (PAs) and nurse practitioners (NPs) can serve an integral role as members of the emergency care team, but do not replace the medical expertise provided by emergency physicians. With the aim of ensuring that all patients seeking telehealth services receive high quality care, the American College of Emergency Physicians (ACEP) endorses the utilization of PAs and/or NPs who are supervised by an American Board of Emergency Medicine/American Osteopathic Board of Emergency Medicine (ABEM/AOBEM) board-certified or board-eligible emergency physician according to ACEP guidelines.

Standards for Referrals for a Higher Level of Care

ACEP supports the limitation of urgent and emergent telehealth services provided to those services normally performed or those for which emergency physicians are credentialed in their normal physical practice. Provision of services via telehealth, whether by telephone or videoconferencing, is no different from traditional care, and physicians must refrain from attempting to make clinical determinations outside of their normal specialty domain. Since patients and/or families are participating in the telehealth service, they should be included in the decision-making processes. Treatment options should be clearly communicated. Patients, and families when appropriate, should be included in shared decision-making regarding treatment options. When a patient needs a higher level of care, instructions on how to obtain that care should be available and provided, as needed.

Legal Considerations for Telehealth

It is important to note that practice location is defined by the patient locale (ie, since the telehealth physician typically must be licensed to practice medicine in the state, as well as potentially credentialed by a hospital or other healthcare facility where the patient is being evaluated) and the laws of that state in which the patient is physically located at the time of the evaluation will prevail. Until there is uniform telehealth governance throughout the United States, it is also prudent to be aware of federal and individual state reimbursement regulations and restrictions that affect billing practices. Emergency medicine practice sites that are requesting and receiving telehealth services for general or specialty services are encouraged to ensure that telehealth

systems and teleconsultants meet all of the above recommendations, so as to provide safe, secure, ethical, legal, and seamless patient care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Emergency Medicine Training, Competency, and Professional Practice Principles

Reaffirmed January 2024, June 2018, and April 2012

Revised January 2006

Originally approved November 2001

Emergency medicine is recognized as a specialty by the American Board of Medical Specialties and the American Osteopathic Association. Responsibilities of specialty status include accrediting graduate medical education training programs and credentialing physicians as certified specialists. These responsibilities require creating standards for competency and defining professional practice principles.

Emergency physicians provide care and make treatment decisions based on real time evaluation of patients' history, physical findings, and many diagnostic studies, including the interpretation of electrocardiographs, imaging studies and laboratory tests. Emergency physicians possess a wide range of skills to treat injuries and illnesses and perform many interventions including but not limited to resuscitative procedures and trauma stabilization in patients of all ages.

It is the role and responsibility of the American Board of Emergency Medicine (ABEM) and the American Osteopathic Board of Emergency Medicine (AOBEM) to set and approve the training standards, assess competency through board certification processes and establish professional practice principles for emergency physicians.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Emergency Medicine Workforce

Originally approved June 2021

The American College of Emergency Physicians (ACEP) has led the growth and evolution of emergency medicine for more than 50 years. Recent workforce studies indicate that there will likely be a surplus of emergency physicians by 2030. In light of this recent workforce data, ACEP believes that the unabated expansion of the emergency medicine workforce cannot continue responsibly based on current projected needs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Emergency Medicine's Role in Organ and Tissue Donation

Reaffirmed January 2024, February 2018, April 2012, October 2006, and October 2000

Originally approved April 1996

The American College of Emergency Physicians recognizes the need for organ and tissue donation and procurement. Emergency medicine can play a key role in this process.

Hospitals and emergency departments should have policies and procedures that facilitate donation and procurement. Procedures should specify the roles of the physicians, hospital staff, surgery recovery teams, and organ procurement agencies.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Emergency Physician Compensation Transparency

Originally approved October 2020

The American College of Emergency Physicians (ACEP) believes that emergency physician compensation can vary substantially based on employment arrangements, but physicians doing comparable work should receive comparable compensation. To that end:

- Emergency physician compensation should be based on transparent and accessible benchmarks and can reflect a mixture of inputs such as:
  - Clinical productivity, including patient volume and complexity
  - The need to provide on-site physician availability around the clock
  - The administration, supervision, and teaching requirements of a particular position
  - Academic productivity
  - Years of experience
  - Board certification status
- Compensation should be reviewed regularly for evidence that it is free of bias against an individual based on their race, gender, age, or other federally protected classes.
- Emergency physicians should receive benefits packages that are commensurate with other similar practice environments within similar geographic regions.
- Emergency physicians should have access to the necessary information to make an adequate compensation assessment.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Emergency Physician Contractual Relationships

Revised April 2021, June 2018, October 2012, January 2006, March 1999, August 1993 with current title

Originally approved October 1984 titled "Contractual Relationships between Emergency Physicians and Hospitals"

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled, "Emergency Physician Contractual Relationships"

The Importance of Good Contracting:

- The interests of patients are best served when emergency physicians practice in a stable, fair, equitable, and supportive environment.
- Quality patient care is best promoted within a framework of fair and appropriate contractual relationships among various involved parties.

Contractual Rights:

- ACEP supports the emergency physician receiving early notice of a problem with his or her performance and an opportunity to correct any perceived deficiency before disciplinary action or termination is contemplated.
- All entities contracting with or employing emergency physicians to provide clinical services, either indirectly or directly, should ensure an adequate and fair discovery process prior to deciding whether or not to terminate or restrict an emergency physician's contract or employment to provide clinical services.
- Emergency physicians employed or contracted should be informed of any provisions in the employment contract or the contracting vendor's contract with the hospital concerning termination of a physician's ability to practice at that site. This includes any knowledge by the contracting vendor of substantial risk of hospital contract instability.
- Emergency physician contracts should explicitly state the conditions and terms under which the physician's contract can be reassigned to another contracting vendor or hospital with the express consent of the individual contracting physician.
- The emergency physician should have the right to review the parts of the contracting entities' contract with the hospital that deal with the term and termination of the emergency physician contract.

Billing Rights:

- The emergency physician is entitled to detailed itemized reports on what is billed and collected for his or her service on at least a semi-annual basis regardless of whether or not billing and collection is assigned to another entity within the limits of state and federal law. The emergency physician shall not be asked to waive access to this information.

- Hospitals should disclose to physicians and/or the contracting vendor which networks, plans, etc. the hospital is contracting with, ie, which networks consider the hospital to be "in-network."
- It is the right of an emergency physician contracting entity to make an independent decision regarding all contractual arrangements that involve insurers and to be represented by legal counsel.
- Health care facilities should provide confidential complete transparency to the emergency physician of all facility charges that are billed as part of an emergency visit.

The Nature of the Contract:

- Business relationships that include emergency physicians are best defined within a written contract.
- The contracting parties should be ethically bound to honor the terms of any contractual agreement to which it is a party and to relate to one another in an ethical manner. This applies even if prior to the initiation of employment or in the case of deferred/delayed employment such as that of a graduating resident or fellow.
- Physician disciplinary, quality of care or credentialing issues pertaining to medical care must be reviewed and affirmed by a licensed emergency physician.
- The emergency physician is individually responsible for the ethical provision of medical care within the physician-patient relationship, regardless of financial or contractual relationships.
- Quality medical care is provided by emergency physicians organized under a wide variety of group configurations and with varying methods of compensation. ACEP does not endorse any single type of contractual arrangement between emergency physicians and the contracting vendor.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Emergency Physician Involvement, Utilization, and Compensation During a Pandemic

Originally approved October 2021

The COVID-19 pandemic revealed critical weaknesses in the practice of medicine. The past three decades have seen the transition from physician owned hospitals, faith-based facilities, and community owned specialty centers, into multi-state corporate healthcare entities. Physicians have reduced input and control of their home institutions. Changes in hospital supply chains and focus on staffing precisely to volume while minimizing salary costs undermined facilities' ability to respond during unforeseen crises. Surge planning and staffing models are based on local seasonal conditions, not low frequency high consequence events.

ACEP affirms the following as necessary and integral to the health and safety of the patients and communities their serve during disasters:

- Emergency physicians must have input into emergency department staffing patterns inclusive of the unexpected surge during a high consequence event of low probability, ensuring the health and safety of patients and the community served.

- Due to the variable flux of such an event, hospitals and health systems must ensure the identification, acquisition, and maintenance of essential materials in preparation for, as well as the training and maintenance of, a defined healthcare workforce capable of responding to each phase of a disaster.

- Partnerships must be developed with hospitals, health systems and jurisdictional agencies to secure funding streams to sustain this critical workforce. This must occur prior to and during a disaster, thus ensuring community resilience.

- The behavioral health needs of healthcare workers must be given higher priority. Family needs of healthcare workers must be considered. Liability protections during disasters and Crisis Standards of Care situations must be put into place. Incentive pay needs to be considered if hospitals expect to retain and encourage critical clinical staff to respond during disasters.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Emergency Physician Practice Costs

Revised June 2022 with current title, April 2016 titled "Emergency Physician Overhead", June 2009

Reaffirmed June 2002

Revised June 1997, September 1992

Originally approved June 1987

Emergency physicians bear significant practice costs. These costs include, but are not limited to:

- Uncompensated and undercompensated care including that resulting from EMTALA mandates.
- Compliant coding, billing, audit appeals, and collections costs.
- Costs associated with the adoption of CMS-directed modifications to emergency department evaluation and management CPT codes, and other CPT codes applicable to the practice of emergency medicine.
- Legal and accounting services.
- Implementation costs of governmental, hospital, and internal quality initiatives.
- Physician management services including medical director duties.
- Personnel and payroll expenses.
- Documentation expenses including scribe costs, transcription costs, documentation training, and supplies.
- Adoption and implementation of electronic health record systems.
- Emergency physician group and individual medical equipment, materials, and supplies including depreciation.
- Office expenses including rent or mortgage expenses for office space, utilities, telephone, information technology (IT) services, and IT support.
- Physician, nurse practitioner, and physician assistant recruitment expenses including travel, moving costs, and orientation.
- Professional books and journals, continuing medical education expenses, professional fees, and licenses.
- Availability expenses. The emergency department must be appropriately staffed and operational 24 hours-a-day, 7 days-a-week in an environment of unscheduled care and variable patient management demands. Unlike other specialists that can be "on call," emergency physicians must be physically present and prepared to provide expert care at all times. This unique practice requirement incurs significant costs that cannot be assigned to a particular patient.
- Costs associated with regional and national disaster preparation and planning, including travel and lodging, vaccine/immunization updates, shift coverage, community support, and adherence to federal/state mandates.
- Expenses related to compliance with mandated patient experience of care initiatives.
- Administrative costs required for adherence to compliance regulations, including patient privacy issues.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Emergency Physician Rights and Responsibilities

Revised April 2021, October 2015, April 2008, July 2001

Originally approved September 2000

The American College of Emergency Physicians (ACEP) believes that high-quality emergency care is best provided when emergency physicians practice in a fair and equitable environment. To provide guidance to physicians and others with respect to contractual arrangements involving the practice of emergency medicine in any setting, ACEP hereby adopts this statement of Emergency Physician Rights and Responsibilities.

Emergency physicians' practices are often pursuant to a contractual arrangement. The legitimate purpose of such contracts is to ensure the efficient and reliable staffing of the emergency department (ED) or other practice setting. However, such contracts may limit or eliminate physicians' rights under the medical staff bylaws and contain other provisions that may compromise the professional autonomy of physicians. Consequently, such contracts may harm the public interest.

This document should be of value to hospitals, physicians, and professional or business entities contracting with individual physicians or groups of physicians for the provision of emergency care. It is anticipated that these guidelines will benefit the profession and the public. These guidelines are not intended to dictate individual contracting practices; rather, ACEP members must make independent determinations regarding their employment and contractual relationships with hospitals, practice groups, and other entities based on their individual circumstances.

Rights of Emergency Physicians

1. Emergency physician autonomy in clinical decision making should be respected and should not be restricted other than through reasonable rules, regulations, and bylaws of his or her medical staff or practice group. This includes reasonable, good faith deviations from current, published ACEP clinical policies based upon the particular clinical situation in a given patient.
2. Emergency physician autonomy should not be unduly restricted by value based or other cost-saving guidelines, contracts, rules, or protocols. The physicians must have the ability to do what they believe in good faith is in the patient's best interest.

3. Emergency physicians and their patients have a right to adequate emergency physician, nurse and ancillary staffing, resources, and equipment to meet the acuity and volume needs of the patients. The facility management must provide sufficient support to ensure high-quality emergency care and patient safety. Emergency physicians shall not be subject to adverse action for bringing to the attention, in a reasonable manner, of responsible parties, deficiencies in necessary staffing, resources, and equipment.
4. Emergency physicians should be reasonably compensated for clinical and administrative services and such compensation should be related to the physician qualifications, level of responsibility, experience, and quality and amount of work performed.
5. Emergency physicians should not be required to purchase unnecessary, unneeded, or excessively priced administrative services from a hospital, contract group of any size, or other parties in return for privileges or patient referrals.
6. Emergency physicians are entitled to detailed itemized reports of billings and collections in their name on at least a semi-annual basis regardless of whether or not billing and collection is assigned to another entity within the limits of state and federal law. Emergency physicians have the right to audit such billings at any time without retribution. The emergency physician must not be asked or induced to waive access to this information.
7. Emergency physicians should be provided access to timely quality and other performance metrics.
8. Emergency physicians are entitled to due process before any adverse final action with respect to employment or contract status, the effect of which would be the loss or limitation of medical staff privileges or their ability to see patients. Emergency physicians' medical and/or clinical staff privileges should not be reduced, terminated, or otherwise restricted except for grounds related to their competency, health status, limits placed by professional practice boards or state law.
9. Emergency physicians should not be required to render anything of value in return for referral of patients by a healthcare facility (eg, through the awarding of an exclusive contract) other than assurances of reliability and high-quality care; nor should emergency physicians receive anything of value in return for referrals of patients to others.
10. Emergency physicians should have the rights outlined in the Emergency Physicians Contractual Relationships policy statement.[1]
11. Emergency physicians have the right to be free from restrictive covenants that restrict their ability to practice medicine, for a period of time or in a geographic area, upon termination of employment or a contract. Such restrictions are not in the public interest.

Responsibilities of Emergency Physicians

1. Emergency physicians bear a responsibility to practice emergency medicine in an ethical manner consistent with contemporary, evidence-based emergency medicine principles.
2. Emergency physicians must maintain current emergency medicine knowledge and skills through independent study, continuing medical education (CME) activities, and appropriate requirements to maintain board certification.
3. Emergency physicians should exhibit attributes of professionalism in the healthcare facility where their practice is based including altruism, accountability, duty, honor, integrity, respect, and positive patient experience.
4. Emergency physicians are encouraged to participate in medical staff and/or hospital affairs.
5. Emergency physicians shall gain knowledge of the basic principles of documentation, coding and reimbursement.
6. In order to interpret practice revenue and expense information, emergency physicians are encouraged to gain knowledge of practice expenses, and other applicable physician administration costs.
7. Emergency physicians should have a working knowledge of quality and other performance metrics and ensure that their practice is consistent with this knowledge.

8. Emergency physicians must maintain knowledge of and compliance with major federal and state laws and regulations that affect the practice of emergency medicine.

[1] American College of Emergency Physicians. Emergency Physicians Contractual Relationships (policy statement). Approved April 2021.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2017

Emergency Physician Shift Work

Revised June 2017, June 2010, and September 2003

Reaffirmed October 1998

Originally approved September 1994

As an adjunct to this policy, ACEP has prepared a Policy Resource Education Paper (PREP) titled, "Circadian Rhythms and Shift Work"

The American College of Emergency Physicians believes that the best interests of patients are served when emergency physicians practice in a fair, equitable, and supportive environment.

The emergency physician's well-being is of fundamental importance to success and longevity in a career in emergency medicine. Well-being is adversely affected by constantly rotating shifts. The effects of rotating shifts are cumulative, and represent one of the most important reasons physicians leave the specialty. The College therefore endorses the following principles:

- Shifts should be scheduled, whenever possible, in a manner consistent with circadian principles. For most settings, scheduling isolated night shifts or relatively long sequences of night shifts is recommended.
- Overly long shifts or inordinately long stretches of shifts on consecutive nights should be avoided whenever possible. In most settings, shifts should last twelve hours or less. Schedulers should take into consideration the total number of hours worked by each practitioner and the intervals of time off between shifts. ACEP strongly recommends that practitioners have regularly scheduled periods of at least 24 hours off work.
- Rotating shifts in a clockwise manner (day to evening to night) is preferred. This applies even when there are intervening days off.
- Night shift workers' schedules must be designed carefully to provide for anchor sleep periods, and those workers' daytime responsibilities should be held to an absolute minimum. Groups should consider various incentives to compensate those working predominantly night shifts.
- Schedules for emergency physicians should take into account factors such as ED volume, patient acuity levels, non-clinical responsibilities, and individual physician's age.
- A place to sleep before driving home after night shifts should be provided.

References

1. Akerstedt T, Wright KP Jr. Sleep loss and fatigue in shift work and shift work disorder. *Sleep Med Clin*. 2009;4:257-271.

2. Barger LK, Cade BE, Ayas NT, et al. Extended work shifts and the risk of motor vehicle crashes among interns. *N Engl J Med.* 2005;352(2):125-34.
3. Brown DL, Feskanich D, Sanchez BN, et al. Rotating night shift work and the risk of ischemic stroke. *Am J Epidemiol.* 2009;169(11):1370-1377.
4. Burch JB, Tom J, Zhai Y, et al. Shiftwork impacts and adaptation among health care workers. *Occup Med (Lond).* 2009;59(3):159-166.
5. Cydulka RK, Korte R. Career satisfaction in emergency medicine: The ABEM Longitudinal Study of Emergency Physicians. *Ann Emerg Med*. 2008;51(6):714-722.
6. Folkard S. Shift work, safety and aging. *Chronobiol Int.* 2008;25(2):183-198.
7. Hublin C, Partinen M, Koskenvuo K, et al. Shift-work and cardiovascular disease: a population-based 22-year follow-up study. *Eur J Epidemiol.* 2010;25(5):315-323.
8. Kuhn G. Circadian rhythm, shift work and emergency physicians. *Ann Emerg Med*. 2001;37:88-98.
9. Sack RL, Auckley D, Auger RR, et al. Circadian rhythm sleep disorders: Part 1, basic principles, shift work and jet lag disorders. *Sleep.* 2007;30(11):1460-1483.
10. Ware JC, Risser MR, Manser T, et al. Medical resident driving simulator performance following a night on call. *Behav Sleep Med.* 2006;4(1):1-12.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Emergency Physician Stewardship of Finite Resources

Revised January 2019

Reaffirmed June 2013, October 2007, October 2001

Originally approved January 1997

As an adjunct to this policy statement, ACEP has prepared a Policy Resource Education Paper (PREP) titled, "Resource Utilization in the Emergency Department: The Duty of Stewardship"

Emergency physicians have a responsibility to patients and society to be prudent stewards of the health care resources entrusted to them. To ensure the protection of patient interests under the constraints of limited resources, ACEP endorses the following.

- The best medical interest of the patient should be foremost in any clinical decision-making process.
- Criteria for appropriate use of finite resources should include (1) the urgency of the patient's medical condition; (2) the likely treatment benefit to the patient; (3) the likely burdens and costs of treatment to the patient; and (4) the costs to other patients and to society.
- Emergency physicians should not allocate health care resources on the basis of the patient's ability to pay, contribution to society, past use of resources, or responsibility for his/her medical condition.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department

Revised February 2023 with current title

Reaffirmed January 2017, April 2011, September 2005, and March 1997

Originally approved August 1992 titled "Emergency Physicians' Patient Care Responsibilities Outside the Emergency Department," replacing Council Resolution titled "Relationship Between the Emergency Department and the Critical Care Unit" March 1977

The emergency physician's principal legal and ethical responsibility is to patients who present to be seen and treated in the emergency department (ED). The American College of Emergency Physicians (ACEP) believes that:

- An emergency physician must be available at all times to respond to emergency department patients in a timely and safe manner while formally assigned as an attending in the ED.
- It is the responsibility of the hospital administration and the organized medical staff to assure adequate medical care for those emergency situations that occur in other hospital departments and areas.
- Hospital medical emergency response plans and teams should be organized in a manner that is not reliant upon an emergency physician unless the ED and its patients' medical needs can be safely provided for at all times.
- Emergency physicians shall have adequate legal protection when responding to in-hospital emergencies outside the ED.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Emergency Ultrasound Certification by External Entities

Reaffirmed February 2020

Originally approved
June 2014

The American College of Emergency Physicians (ACEP) believes that certification by non-emergency medicine external bodies, organizations, societies or other medical specialties or upon short course completion is inadequate to demonstrate comprehensive training, knowledge, and skill in the practice of emergency ultrasound.

Emergency ultrasound comprises a set of focused applications utilized to diagnose life-threatening conditions, guide invasive procedures, and treat emergency medical conditions. Both residency-based and practice-based pathways exist for emergency physicians to demonstrate competency in emergency ultrasound as detailed in the ACEP policy statement, "Emergency Ultrasound Guidelines."

Any non-emergency medicine external certification process would impede the use of this critical clinical skill and adversely affect patient care.

ACEP strongly opposes the use of any non-emergency medicine external certification process to validate competency in the use of emergency ultrasound. Furthermore, any such process should not be utilized as a requirement for hospital privileges or credentialing, nor for reimbursement by accountable care organizations (ACOs), managed care organizations (MCOs), the Centers for Medicare and Medicaid Services (CMS) or other third-party payers.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Emergency Ultrasound Imaging Criteria Compendium

Revised October 2021, October 2014

Originally approved April 2006

Emergency Ultrasound Imaging Criteria Compendium

- Aorta
- Cardiac
- Female Pelvis
- Gastrointestinal/Gut
- Kidney and Bladder
- Lung and Pleura
- Ocular
- Pediatric
  - Appendicitis
  - Hypertrophic Pyloric Stenosis
  - Intussusception
  - Lung
  - MSK
- Right Upper Quadrant/Hepatobiliary
- Soft Tissue/Musculoskeletal
- Resuscitative Transesophageal Echocardiography (TEE)
- Trauma
- Ultrasound-Guided Procedures
- Venous Thrombosis

Aorta

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the thoracic and abdominal aorta in patients suspected of having an acute abdominal aortic aneurysm (AAA) and/or acute aortic dissection (AAD).

Ultrasound has been shown to rapidly and accurately identify both normal and pathologic states of the abdominal and thoracic aorta. Emergency medicine providers are capable of utilizing CUS for screening and identifying acute aortic pathologies.[1,2] Commonly, CUS is used to identify or exclude the presence of AAA. However, CUS of the thoracic and abdominal aorta can also identify the presence of dissection and other pathologies. Patients in whom a AAA is identified, assessment for free intraperitoneal fluid should occur despite recognizing that ruptures into the retroperitoneal space are difficult to identify on CUS. It is important to keep a strong clinical suspicion for rupture in the proper clinical setting. In the setting of type A aortic dissections, indirect signs (pericardial effusion, aortic regurgitation, and dilated aortic root) can also be identified with CUS to increase the sensitivity of making the diagnosis.[1]

CUS evaluation of the aorta occurs in conjunction with other CUS applications, imaging studies and laboratory tests. CUS attempts to answer specific questions about a particular patient's condition. While other modalities may provide more detailed information, higher sensitivity, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, rapidly deployed, repeatable and does not entail patient relocation from the resuscitation area. Further, CUS avoids delays to critical diagnoses, cost, specialized technical personnel, the administration of iodinated contrast agents and the biohazardous potential of radiation. These advantages make CUS a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as acute AAA or AAD. The use of contrast enhanced ultrasound (CEUS) can provide increased diagnostic certainty when diagnosing pathologic states of the aorta such as AAD or AAA with or without rupture.[3] Failure to identify or rule out these aortic pathologies on CUS exam should prompt additional emergent diagnostic modalities such as a computed tomography angiography (CTA) scan.[4] Additionally, emergency medicine (EM) physicians can utilize transesophageal echocardiography (TEE) safely and effectively during arrest or peri-arrest states to examine the aorta in those critical situations.

2. Indications/Limitations

a. Primary Indication
   The rapid evaluation of the abdominal aorta from the diaphragmatic hiatus to the aortic bifurcation for evidence of aneurysm.
b. Extended Indications
   i. Abdominal aortic dissection
   ii. Thoracic aortic dissection
   iii. Intraperitoneal free fluid when AAA is identified
   iv. Iliac, splenic, and other abdominal artery aneurysms
   v. Identification of pericardial effusion, aortic regurgitation, and/or aortic root dilation (indirect signs) when suspicion for thoracic aortic dissection is present
c. Contraindications
   There are no absolute contraindications to CUS of the abdominal or thoracic aorta. There may be relative contraindications based on the patient's specific clinical situation.
d. Limitations

i. CUS of the aorta is a single component of the overall and ongoing resuscitation. Since it is a focused examination, CUS does not identify all abnormalities or diseases of the aorta. CUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. Transthoracic CUS, when conducted under optimal conditions, has been shown in several studies to have good sensitivity for the diagnosis of type A acute aortic dissection by direct or indirect signs.[1,2] If the findings of the CUS are equivocal, additional diagnostic testing may be warranted.

ii. Examination of the aorta may be technically limited by:
   1. Obese habitus
   2. Bowel gas
   3. Abdominal tenderness
   4. Physical obstructions (ie, Abdominal or thoracic dressings, bony structures, masses, ostomy/colostomy, etc)
   5. Open abdominal or thoracic wounds

e. Pitfalls

i. While most aneurysms are fusiform, extending over several centimeters of aorta, saccular aneurysms are confined to a short focal section of the aorta, making them easily overlooked. This may be avoided by methodical, systematic real-time scanning through all tissue planes in both transverse and longitudinal sections of the abdominal aorta.

ii. When bowel gas or other technical factors prevent a complete systematic real-time scan in orthogonal planes, these limitations should be identified and documented. Such limitations may mandate further evaluation by alternative methods, as clinically indicated.

iii. A small aneurysm does not preclude rupture. A patient with symptoms consistent with acute AAA and an aortic diameter greater than 3.0 cm should undergo further diagnostic evaluation.

iv. The absence of free intraperitoneal fluid does not rule out acute AAA. This is due to understanding that most acutely ruptured AAAs have retroperitoneal bleeding and thus may not show free peritoneal fluid. The presence of retroperitoneal hemorrhage cannot be reliably identified by CUS.

v. If an AAA is identified, it still may not be the cause of a patient's symptoms.

vi. The presence of free intraperitoneal fluid with an AAA, does not necessarily mean that the aneurysm is the source of the fluid. Acute blood cannot be differentiated from some other fluid substances (ie, ascites) on ultrasound.

vii. Oblique or angled cuts exaggerate the true aortic diameter. Scanning planes should be obtained that are either exactly aligned with, or at exact right angles to, the main axis of the vessel.

viii. Off-plane longitudinal images and transverse images not obtained at the level of maximal aortic diameter will underestimate the true diameter of the vessel and/or aneurysm.

ix. With a tortuous or ectatic aorta "longitudinal" and "transverse" views should be obtained with respect to the axis of the vessel in order to avoid artifactual exaggeration of the aortic diameter.

x. Large para-aortic nodes may be confused with the aorta and/or AAA. They usually occur anterior to the aorta, but may be posterior, displacing the aorta away from the vertebral body. They can be distinguished by an irregular nodular shape, identifiable in real-time. If color flow Doppler is utilized, nodes will not demonstrate high-velocity luminal flow.

xi. Longstanding thrombus within an AAA may become calcified and mistaken for bowel outside the aorta, thereby obscuring the aortic walls and preventing recognition of the aneurysm. Gain should be adjusted so that blood within the lumen of the vessel appears anechoic.

xii. Transthoracic and transabdominal CUS of the aorta alone lacks sufficient sensitivity to rule out the diagnosis of AAD. It should not be the sole method of evaluation to exclude

dissection when high clinical suspicion exists. Conversely, CUS has high specificity when direct signs, such as an intramural dissection flap, are present.[1] Indirect findings such as a dilated aortic root, and pericardial effusion should raise concern for dissection. Recent literature suggests CUS can be used in conjunction with risk stratification algorithms and lab testing (ie, D-Dimer) to improve accuracy in the diagnosis of AAD in certain low risk patients.[5]

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the aorta provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.[6]

Due to the time-critical and dynamic nature of acute ruptured AAA or aortic dissection, emergent interventions may be mandated by the diagnostic findings of CUS of the aorta. For this reason, CUS of the aorta should occur as soon as the clinical decision is made to evaluate the patient with ultrasound for these potential diagnoses.[6] Ideally the ultrasound information obtained can be readily available to consulting physicians, documented in accordance with professional standards and the images permanently stored in the patient records. These actions may further expedite patient care.

Physicians of a variety of medical specialties may perform CUS of the aorta. Training should be in accordance with specialty or organization specific guidelines.

4. Specifications for Individual Examinations

Abdominal Aorta

a. General: Ultrasound images can be obtained demonstrating the abdominal aorta to evaluate for AAA and abdominal aortic dissection simultaneously with other aspects of the resuscitation. The abdominal aorta can be easily identified and accurately measured in the transverse plane. A typical landmark, the vertebral body, can be identified in the transverse plane. The vertebral body will show a hyperechoic line followed by an acoustic shadow. In this plane, the normal aorta is a circular, hypoechoic structure with a hyperechoic circumferential wall identified adjacent to the left anterior surface of the vertebral body.
b. Real-time scanning technique:
    i. Overview: The abdominal aorta extends from the diaphragmatic hiatus to the bifurcation. The surface anatomy corresponding to these points are the xiphoid process and the umbilicus. If possible, the probe is held perpendicular to the skin with the transducer marker towards the right side of the patient. The probe is swept from the xiphoid process inferiorly to the umbilicus, providing real-time systematic scanning through all planes from the diaphragm to the bifurcation. The probe is then rotated 90 degrees towards the patient's head and images are obtained in the longitudinal plane by sliding the probe inferiorly.
    ii. Details of technique: In the subxiphoid region, the liver often provides a sonographic window. A cooperative patient may be asked to take a deep breath, which augments this window by lowering the diaphragm and liver margin. Frequently, gas in the transverse colon obscures the midsection of the aorta in a roughly 5-centimeter band inferior to the margin of the liver. This may preclude an uninterrupted and/or complete visualization of the aorta. In order to circumvent the gas-filled transverse colon, it may be necessary to use a fanning technique in the windows above and below this sonographic artifact. Applying downward constant pressure with the probe, in conjunction with peristalsis, may dissipate bowel gas.

    After a systematic real-time scan in the transverse plane, the aorta should be scanned longitudinally. In this view, abnormalities in the lateral walls may be missed, but focal

abnormalities in the anterior or posterior walls and absence of normal tapering are more easily appreciated.

iii. Additional windows: If bowel gas and/or truncal obesity interfere with visualization of the aorta in the anterior midline, the emergency physician should use any probe position that affords windows of the aorta. In particular, two additional windows can be used. First, in the right midaxillary line intercostal views using the liver as an acoustic window may provide alternate images of the aorta. To optimize this approach, the patient may be placed in a left decubitus position. On this view, the aorta will appear to be lying "deep" to the inferior vena cava. Second, the distal aorta can sometimes be visualized with the probe placed in a left paraumbilical region.

iv. Measurements: The aorta (and other abdominal arteries) is measured from the outside margin of the wall on one side to the outside margin of the other wall. In most instances, the anterior and posterior walls are usually more sharply defined, so an antero-posterior measurement is most precise. However, since many AAAs have larger side-to-side than antero-posterior diameters, measurements are obtained in both directions when possible. The maximum aortic diameter should be measured in both transverse and longitudinal planes. Ideally a minimum of four locations are measured, which include the proximal, infrarenal, distal and iliac bifurcation or the aorta. A measurement of 3cm or less is used to describe a normal diameter.

v. Additional technical considerations: If an AAA is identified, evaluation of the peritoneal cavity for free fluid (using the approach of the Focused Assessment by Sonography in Trauma) should be made. When available, CEUS can provide additional information rapidly at the bedside to identify both ruptured and intact AAA.

Thoracic Aorta

a. General: The thoracic aorta originates at the aortic valve ascending rightward and cephalad before curving leftward and back down caudad in a candy cane like pattern. Aortic root dilation/aneurysm can be identified and measured. Aortic dissections will appear as hyperechoic, mobile and/or fluttering linear flaps within the lumen of the aorta.

b. Real-time scanning:

i. Overview: The proximal arch and descending thoracic aorta (DTA) can be identified through a transthoracic approach through a parasternal long axis (PLAX) approach. The root and ascending arch appear as longitudinal tubular structures identified as centrally anechoic with adjacent hyperechoic walls. The DTA is also seen in a transverse orientation as a centrally anechoic circular structure with hyperechoic circumferential walls and is visualized posterior to the left atrium in the same window. Additional views, such as the right parasternal and apical windows, can be utilized to optimize visualization and improve accuracy. When possible, placing the patient in the left lateral decubitus position with the left arm raised can help facilitate most of these cardiac views.

ii. Details of technique: Improved visualization of the aorta root can be achieved from the standard PLAX by translating the probe in a cephalad position, either sliding up a rib space or fanning the transducer beam more cephalad from the standard PLAX position. From this position, the ascending aorta can be measured at end-diastole in an anterior-posterior position from leading edge to leading edge (or "outside to inside"). A measurement of more than 4cm is considered dilated at the level of the aortic root. This finding, in the right clinical setting, should prompt further evaluation with CUS or additional imaging.

iii. Additional windows: An apical 5 chamber (A5C) view may allow visualization of the aortic root and proximal ascending aorta. The A5C view is obtained by finding the apical 4 chamber (A4C) view and fanning the ultrasound beam in a more cephalad orientation. (See Cardiac Section) Aortic dilation, a dissection flap and aortic regurgitation may be noted on this view. The ascending aorta, aortic arch and proximal descending thoracic aorta are evaluated utilizing the suprasternal notch view. Suprasternal notch view is obtained by placing the

probe in the suprasternal notch, directed inferiorly into the mediastinum. In certain patients with difficult windows, As stated in the cardiac section, a bolster under the patient's shoulders with the neck in full extension will facilitate this view allowing visualization of the aortic arch and great vessels which lay behind the sternum. Additional functions such as color flow or power doppler can be used to correctly identify the structures.

iv. Measurements: The thoracic aorta is measured from L-L just distal to the aortic valve. This differs from the abdominal aorta which is measured from outer-to-outer edges. A measurement in adults of more than 4cm should be used as the threshold for dilatation.

v. Additional technical considerations: Use of color and power doppler can help to identify flow on both or one side of the dissection flap. Use of CEUS can help to visualize dissection as well. CUS TEE in the appropriate clinical setting offers higher sensitivity and specificity for the diagnosis of thoracic aortic dissection than transthoracic methods.

5. Documentation

In performing CUS of the aorta, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record in real time. Documentation should include the indication for the procedure, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images. However, when CUS is utilized for critical decision making and coordination of care by specialists not performing the CUS, images should be made available to specialists in real time for review.

6. Equipment Specifications

Curvilinear or phased array ultrasound transducers can be utilized for evaluating the abdominal aorta. A 2.0 – 5.0 MHz multi-frequency transducer is ideal. The lower end of this frequency range may be needed in larger patients, while the higher frequency will give more detail in those with low body mass index. A phased array transducer, 2.0 – 5.0 MHz multi-frequency, is ideal for transthoracic imaging. Harmonic imaging at the highest possible frequencies should be utilized when examining the thoracic aorta. Both portable and cart-based ultrasound machines may be used, understanding that image quality may be sacrificed with portable, hand-held devices.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Nazerian P, Mueller C, Vanni S, et al. Integration of transthoracic focused cardiac ultrasound in the diagnostic algorithm for suspected acute aortic syndromes. *Eur Heart J*. 2019;40(24):1952-60.
2. Sobczyk D, Nycz K. Feasibility and accuracy of bedside transthoracic echocardiography in diagnosis of acute proximal aortic dissection. *Cardiovasc Ultrasound*. 2015;13:15.
3. Evangelista A, Avegliano G, Aguilar R, Cuellar H, Igual A, Gonzalez-Alujas T, et al. Impact of contrast-enhanced echocardiography on the diagnostic algorithm of acute aortic dissection. *Eur Heart J*. 2010;31(4):472-9.
4. Erbel R, Aboyans V, Boileau C, et al. 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European

Society of Cardiology (ESC) [published correction appears in *Eur Heart J*. 2015 Nov 1;36(41):2779]. *Eur Heart J*. 2014;35(41):2873-926. doi:10.1093/eurheartj/ehu281

5. Nazerian P, Mueller C, Soeiro AM, et al. Diagnostic Accuracy of the Aortic Dissection Detection Risk Score Plus D-Dimer for Acute Aortic Syndromes: The ADvISED Prospective Multicenter Study. *Circulation*. 2018;137(3):250-258. doi:10.1161/CIRCULATIONAHA.117.029457
Rubano E, Mehta N, Caputo W, Paladino L, Sinert R. Systematic review: emergency department bedside ultrasonography for diagnosing suspected abdominal aortic aneurysm. *Acad Emerg Med*. 2013;20(2):128-38.

Cardiac

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the heart in patients suspected of having emergent conditions where cardiac imaging may influence diagnosis or therapy.

The primary applications of cardiac CUS are in the diagnosis or exclusion of pericardial effusion, cardiac tamponade as well as the evaluation of gross cardiac function and right heart strain. Increasingly, evaluation of the aortic root is considered an integral part of focused cardiac EUS, and evaluation of the inferior vena cava for fluid status may be considered part of the cardiac exam. Cardiac EUS is an integral component of patient evaluation and/or resuscitation. It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. Other diagnostic or therapeutic interventions may take precedence or may proceed simultaneously with the cardiac EUS evaluation. While other tests may provide information that is more detailed than EUS, have greater anatomic specificity, or identify alternative diagnoses, EUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Further, EUS avoids the delays, costs, specialized technical personnel, the administration of contrast agents and the biohazardous potential of radiation. These advantages make EUS a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as acute cardiac disease. In addition, cardiac EUS is an integral component of the trauma EUS evaluation.

2. Indications/Limitations

a. Primary
   i. Detection of pericardial effusion and/or tamponade
   ii. Evaluation of gross cardiac activity in the setting of cardiopulmonary resuscitation
   iii. Evaluation of global left ventricular systolic function
   iv. Evaluation of right heart strain

b. Extended
   i. Gross estimation of intravascular volume status and cardiac preload.
   ii. Identification of acute right ventricular dysfunction and/or acute pulmonary hypertension in the setting of acute and unexplained chest pain, dyspnea, or hemodynamic instability.
   iii. Identification of proximal aortic dissection or thoracic aortic aneurysm.
   iv. Assessment for volume responsiveness, cardiac output, and stroke volume
   v. Procedural guidance of pericardiocentesis, pacemaker wire placement and capture.

c. Contraindications
   There are no absolute contraindications to cardiac CUS. There may be relative contraindications based on specific features of the patient's clinical situation.

d. Limitations

i. Cardiac CUS is a single component of the overall and ongoing evaluation. Since it is a focused examination CUS does not identify all abnormalities or diseases of the heart. cUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. Additional diagnostic testing may be indicated if the findings of the CUS are equivocal.

ii. Cardiac CUS is capable of identifying many conditions beyond the primary and extended CUS applications listed above. These include but are not limited to: assessment of diastolic dysfunction, valvular abnormalities, intracardiac thrombus or mass, ventricular aneurysm, septal defects, aortic dissection, and hypertrophic cardiomyopathy. While these conditions may be discovered when performing cardiac CUS, they are typically outside of the scope of focused cardiac CUS and should typically undergo appropriate consultant-performed imaging for confirmation or follow-up.

iii. Cardiac CUS is technically limited by:
   1. Abnormalities of the bony thorax
   2. Pulmonary hyperinflation
   3. Massive obesity
   4. The patient's inability to cooperate with the exam
   5. Subcutaneous emphysema

e. Pitfalls

i. Detection of pericardial effusion and/or tamponade:
   a. The measured size of a pericardial effusion should be interpreted in the context of the patient's clinical situation. A small rapidly forming effusion can cause tamponade, while extremely large slowly forming effusions may be tolerated with minimal symptoms.[1]
   b. Small or loculated pericardial effusions may be overlooked. As with other CUS, the heart should be scanned through multiple tissue planes in two orthogonal directions.
   c. Pleural effusions may be mistaken for pericardial fluid. Evaluation of other areas of the chest usually reveals their characteristic shape and location. In addition, the relationship of an effusion with the descending aorta on the parasternal long axis view can help differentiate pericardial from pleural effusion.
   d. Occasionally, hypoechoic epicardial fat pads may be mistaken for pericardial fluid. Epicardial fat usually demonstrates some internal echoing, is not distributed evenly in the pericardial space, and moves with epicardial motion.
   e. The descending aorta may be mistaken for a posterior effusion. This can be resolved by rotating the probe to view the descending aorta in the transverse plane.

ii. Evaluation of gross cardiac activity in the setting of cardiopulmonary resuscitation:
Sonographic evidence of cardiac standstill should be interpreted in the context of the entire clinical picture.[2] In a multicenter trial, 0.06% of ED patients who presented with cardiac standstill survived until discharge. For this reason, the presence of cardiac standstill during resuscitation cannot be used alone to terminate resuscitative measures.[3] CUS during CPR can extend the duration of pulse checks. To limit this a timekeeper should be designated to assure any CUS exam duration is less than the recommended 10 second interval, or a transesophageal probe can be placed by a qualified provider for continuous cardiac monitoring.

iii. Evaluation of global left ventricular systolic function:
Clotted hemopericardium may appear hyperechoic or isoechoic relative to the myocardium and can be overlooked if the examining physician is expecting only anechoic appearing effusions.

iv. Evaluation of right heart strain:
   a. Cardiac CUS may reveal sonographic evidence of right ventricular strain in cases of massive pulmonary embolism sufficient enough to cause hemodynamic instability. However, a normal appearing RV does not exclude pulmonary embolism.

b. Evidence of right ventricular strain may be due to causes other than pulmonary embolism. These include acute right ventricular infarct, pulmonic stenosis, and chronic pulmonary hypertension.

v. When technical factors prevent an adequate examination, these limitations should be identified and documented. As usual in emergency practice, such limitations may mandate further evaluation by alternative methods, as clinically indicated.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Cardiac CUS provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by cardiac CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of cardiac disease, emergent interventions may be mandated by the diagnostic findings of CUS examination. For this reason, cardiac CUS should be performed as soon as the clinical decision is made that the patient needs a sonographic evaluation.

Physicians of a variety of medical specialties may perform focused cardiac ultrasound. Training should be in accordance with specialty or organization-specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute cardiac disease, as outlined above.

4. Specifications for Individual Examinations

a. General - Images are obtained and interpreted in real time without removing the patient from the clinical care area. Images are ideally obtained in a left-semi-decubitus position, although the clinical situation often limits the patient to lying supine. Images may be captured for documentation and/or quality review. Recording of moving images, either in video or cine loops, may provide more information than is possible with still cardiac CUS images. However, capturing moving images may be impractical in the course of caring for the acutely ill patient.

b. Key components of the cardiac CUS evaluation

i. Evaluation of pericardial effusion:
Pericardial effusion usually appears as an anechoic or hypoechoic fluid collection within the pericardial space. With inflammatory, infectious, malignant or hemorrhagic etiologies, this fluid may have a more complex echogenicity. Fluid tends to collect dependently but may be seen in any portion of the pericardium. Very small amounts of pericardial fluid can be considered physiologic and are seen in normal individuals. A widely used system classifies effusions using the measured width of the effusion during diastole: trivial effusion (seen only in systole), small effusion (< 10 mm, often non-circumferential), moderate effusion (10-20 mm, circumferential), and large effusion (>20 mm).[4]

ii. Echocardiographic evidence of tamponade:

a. Qualitative visualization of RV diastolic collapse is most common however diastolic collapse of any chamber in the presence of moderate or large effusion is indicative of tamponade.

b. Hemodynamic instability with a moderate or large pericardial effusion, even without identifiable right ventricle (RV) diastolic collapse, is suspicious for tamponade physiology, particularly in patients with known pulmonary hypertension.

c. A dilated non-collapsible IVC (diameter > 2.1cm and <50% inspiratory collapse) in the presence of pericardial effusion is also suspicious for tamponade physiology.

d. Other advanced findings of tamponade that may be used at the physician's discretion include:

1. Quantitative assessment of right ventricular diastolic collapse in the parasternal long axis view using M-mode at the mitral valve leaflet tip. The timing of right ventricular collapse can be correlated to diastole using the opening of the mitral valve leaflet.
2. Ultrasonographic pulsus paradoxus identifies the exaggerated respiratory variation found in tamponade physiology using variation in mitral and tricuspid inflow velocities. Peak to peak inflow velocity differences of 25% or greater at the mitral valve and 40% or greater at the tricuspid valve suggests tamponade physiology.

iii. Evaluation of gross cardiac motion in the setting of cardiopulmonary resuscitation:
   a. Cardiac standstill is demonstrated on CUS by the lack of myocardial contraction and has the gravest of prognoses. The decision to terminate resuscitative efforts should be made on clinical grounds in conjunction with the sonographic findings.[2,3,5]
   b. Transesophageal echocardiography (TEE) is an advanced application of CUS and when used by properly trained individuals can be an invaluable diagnostic tool in cardiopulmonary resuscitation (see resuscitative TEE chapter). TEE is indicated when interpretable images cannot be obtained using standard TTE. Subcutaneous emphysema, hyperinflated lungs, and trauma are some patient level factors that may inhibit adequate TTE imaging. Ongoing CPR and crowding at the head of the bed are environmental factors that may contribute to poor TTE images.

iv. Evaluation of global left ventricular systolic function:
   a. Published investigations demonstrate that emergency physicians with relatively limited training and experience can accurately estimate cardiac ejection fraction. Left ventricular systolic function is typically graded as normal (EF>50%), moderately depressed (EF 30-50%), or severely depressed (EF<30%).[6]
   b. Advanced techniques used at the physician's discretion
   E Point Septal Separation (EPSS) measures the longitudinal distance between the anterior mitral valve leaflet and the septum on the parasternal long axis view using M-mode. An EPSS value of > 7mm can be used to indicate a severely depressed ejection fraction.[7]

v. Evaluation of right ventricular strain:
   a. In the parasternal short axis view, the "D-sign" indicates right ventricular strain. The "D-sign" refers to a D-shaped left ventricle that is present throughout the cardiac cycle due to septal flattening from elevated pressures within the right ventricle.[8]
   b. In the apical 4 chamber view, the right ventricle to left ventricle end-diastolic basal diameter ratio is normally 0.6:1. A ratio of RV:LV $\geq$ 1 indicates right ventricular dilatation.[9] Paradoxical septal movement may also be visualized in the apical 4 chamber view. This is when the septum paradoxically moves toward the LV in diastole instead of the typical movement toward the RV.
   c. In the apical 4 chamber view, "McConnell's sign" indicates right ventricular strain. "McConnell's sign" is defined as a regional pattern of right ventricular dysfunction with akinesia of the mid free wall and hypercontractility of the apical wall.[10]
   d. Advanced techniques used at the physician's discretion
   Tricuspid Annular Plane Excursion (TAPSE) measures the longitudinal movement of the right ventricle. TAPSE is obtained by tracing the longitudinal movement of the lateral tricuspid valve using M-mode. A TAPSE of < 16 mm is indicative of right ventricular systolic dysfunction.[8]

5. Documentation

In performing cardiac CUS, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a

part of the medical record and done so in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A phased array cardiac transducer is optimal, since it facilitates scanning through the narrow intercostal windows, and is capable of high frame rates, which provide better resolution of rapidly moving cardiac structures. If this is not available, a 2-5 MHz general-purpose curved array abdominal probe, preferably with a small footprint, will suffice. The cardiac presets available on most equipment may be activated to optimize cardiac images. Doppler capability may be helpful in certain extended cardiac CUS indications but is not routinely used for the primary cardiac CUS indications. Both portable and cart-based ultrasound machines may be used for patient care.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Alerhand S, Carter JM. What echocardiographic findings suggest a pericardial effusion is causing tamponade? *Am J Emerg Med*. 2019;37(2):321-6.
2. Reynolds JC, Issa MS, Nicholson TC, Drennan IR, Berg KM, O'Neil BJ, Welsford M. Prognostication with point-of-care echocardiography during cardiac arrest: a systematic review. *Resuscitation*. 2020;152:56-68.
3. Gaspari R, Weekes A, Adhikari S, Noble VE, Nomura JT, Theodoro D, et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. *Resuscitation*. 2016;109:33-9.
4. Klein AL, Abbara S, Agler DA, Appleton CP, Asher CR, Hoit B, et al. American Society of Echocardiography clinical recommendations for multimodality cardiovascular imaging of patients with pericardial disease: endorsed by the Society for Cardiovascular Magnetic Resonance and Society of Cardiovascular Computed Tomography. *J Am Soc Echocardiogr.* 2013;26(9):965-1012.e15.
5. Blaivas M, Fox JC. Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echocardiogram. *Acad Emerg Med*. 2001;8(6):616-21.
6. Randazzo MR, Snoey E, Levitt M, Binder K. Accuracy of emergency physician assessment of left ventricular ejection fraction and central venous pressure using echocardiography. *Acad Emerg Med*. 2003;10(9):973-7.
7. McKaigney CJ, Krantz MJ, La Rocque CL, Hurst ND, Buchanan MS, Kendall JL. E-point septal separation: a bedside tool for emergency physician assessment of left ventricular ejection fraction. *Am J Emerg Med*. 2014;32(6):493-7.
8. Rudski LG, Lai WW, Afilalo J, Hua L, Handschumacher MD, Chandrasekaran C, et al. Guidelines for the echocardiographic assessment of the right heart in adults: a report from the American Society of Echocardiography endorsed by the European Association of Echocardiography, a registered branch of the European Society of Cardiology, and the Canadian Society of Echocardiography. *J Am Soc Echocardiogr*. 2010;23(7):685-713.
9. Weekes AJ, Oh L, Thacker G, Johnson AK, Runyon M, Rose G, et al. Interobserver and intraobserver agreement on qualitative assessments of right ventricular dysfunction with echocardiography in patients with pulmonary embolism. *J Ultrasound Med*. 2016;35(10):2113-20.
10. Walsh BM, Moore CL. McConnell's sign is not specific for pulmonary embolism: case report and review of the literature. *J Emerg Med*. 2015;49(3):301-4.

Female Pelvis

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the female pelvis in emergency patients to evaluate for evidence of acute pathology including ectopic pregnancy, ovarian cysts, fibroids, tubo-ovarian abscess, pelvic mass, and ovarian torsion.

First trimester pregnancy complications such as abdominal pain and vaginal bleeding are common presenting complaints and assessment for intrauterine pregnancy (IUP) is well within the scope of emergency medicine (EM) practice. In an unassisted conception, obstetric ultrasound findings of an intrauterine pregnancy dramatically reduce the possibility of ectopic pregnancy.[1] Additionally there is strong evidence that CUS can reduce emergency department (ED) length of stay and reduce morbidity.[2,3] The scope of practice for pelvic ultrasound may vary depending on individual provider experience, comfort/skill level, and departmental policies**.** However, for those providers/institutions that choose to evaluate for gyn pathology, tubo-ovarian abscess, fibroids, ovarian cysts, ovarian torsion, and pelvic masses may be in scope.

CUS of the pelvis occurs as a component of the overall clinical examination of a patient presenting with symptoms related to the pelvic area. It is a clinical focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. Other diagnostic tests may provide more detailed information than CUS, show greater anatomic detail, or identify alternative diagnoses. However, CUS is non-invasive, rapidly deployed, is repeatable, allows the patient to remain under a physician's direct care, and avoids delays, costs, specialized technical personnel, and bio-hazardous potentials of radiation and contrast agents. These advantages make it a valuable addition to the diagnostic resources available to the physician caring for patients with time-sensitive or emergency conditions such as ectopic pregnancy and other causes of acute pelvic pain. Should a provider not identify a condition that is outside of their CUS scope of practice is not a failure of the CUS imaging strategy. Similarly, pursuing subsequent comprehensive imaging, that may identify conditions that are out of CUS scope, reflects an accepted conservatism within the practice.

Transabdominal and transvaginal ultrasound are within the scope of EM practice and are a continuum of the same skill set. When indicated and available, transvaginal ultrasound may be performed by an emergency physician. There is good evidence that the transvaginal ultrasound exam is well received by patients and is no more painful or embarrassing than other aspects of standard obstetrical care.[4]

2. Indications/Limitations

a. Primary
   i. To evaluate for the presence of intrauterine pregnancy, minimizing the likelihood of an ectopic pregnancy when modifying factors such as assisted reproductive therapy are not present.
   ii. When an IUP is identified, it is within the scope of EM practice to assess for gestational age fetal cardiac activity, multiple gestations, and fetal orientation in the uterus.
   iii. To assess for free fluid exceeding an expected physiologic amount.

b. Extended
   i. Ovarian cysts
   ii. Fibroids
   iii. Tubo-ovarian abscess
   iv. Ovarian torsion assessment
   v. Directly identifying an ectopic pregnancy (versus recognizing there is no definitive IUP)

vi. 2nd/3rd trimester OB

c. Contraindications:

Pregnancy via assisted reproductive therapy should not be solely evaluated with a limited CUS exam. Assisted reproduction has an unacceptable rate of heterotopic pregnancy and therefore finding an IUP does not rule out ectopic pregnancy. Additionally, assisted reproduction carries the risk of ovarian hyperstimulation syndrome.

i. Transvaginal CUS
   1. Given the invasive nature of the exam, providers should always ask for consent prior to performing transvaginal ultrasound.
   2. Patients with an intact hymen, pediatric patients, and virgins should not undergo transvaginal CUS.
   3. Third trimester vaginal bleeding of unknown etiology or known placenta previa because transvaginal manipulation may worsen bleeding.
   4. Premature rupture of membranes due to increased risk of infection and chorioamnionitis.
   5. Recent vaginal surgery, typically up to 6 weeks post-operative, as instrumentation may lead to hemorrhage, infection, or wound dehiscence.

d. Limitations:

i. Large body habitus and increased adipose tissue may limit visualization on transabdominal ultrasound. Transvaginal imaging may improve diagnostic capabilities.

ii. Transvaginal exams can be uncomfortable particularly for patients with vaginismus. Vaginismus is a relative contraindication. Communication of the procedure, adequate lubrication, patient insertion of the probe, and downward pressure of the probe may aid tolerance to the exam.

iii. When evaluating for an IUP, delayed presentation or unknown gestational age poses a challenge as anatomy can be distorted or unexpected.

iv. The primary objective of a limited obstetric CUS is to rule out ectopic patients\ Detection of congenital or fetal abnormalities is outside the scope of CUS exams. Providers should advise patients CUS does not supersede routine obstetric care and follow-up.

v. Anatomy may be distorted in patients who have had gynecologic or rectal surgery.

vi. Multiple gestations are challenging due to variance in fetal positioning and location. Viability may be confounded, for example missed abortion of one fetus can affect the other viable fetus(es).

e. Pitfalls

i. CUS for ovarian torsion should be utilized to rule in ovarian torsion by identifying adnexal masses or ovarian enlargement, particularly when greater than 5cm. Para-ovarian, tubal, or para-tubal masses may be difficult to assess due to location in the adnexal and limitations with bowel gas. CUS sensitivity for torsion may be increased by assessing vascularity with doppler, however normal flow does not rule out torsion given intermittent torsion and the dual blood supply to the ovary.

ii. Utilize caution when assessing ectopic pregnancy of rare locations such as interstitial, cesarean section scar, or cervical ectopic pregnancy. Given proximity to endometrial tissue, interstitial and cesarean section scar pregnancies can progress later in the first trimester before becoming symptomatic. Increased sensitivity for detecting interstitial or cesarean scar ectopic pregnancy includes assessing for eccentrically located pregnancy and a myometrial mantle <5 to 7 mm. Cervical ectopic pregnancy can appear similar to an inevitable abortion. Gentle pressure may displace an inevitable abortion or serial exams aid in differentiating the two pathologies.

iii. After ruling out ectopic pregnancy, providers should avoid anchoring bias by assessing for other gynecologic and non-gynecologic pathology.

iv. Atypical uterine position such as a retroverted or retroflexed uterus can be limited on transabdominal exam. Providers enhance image quality by awaiting a full bladder, lying the

patient flat, moving lateral to the midline, and applying gentle graded pressure. Transvaginal ultrasound often has superior visualization of the retroverted or retroflexed uterus.

v. Hemorrhage and free fluid may be difficult to recognize due to mixed echogenicity material in the pelvis from blood in various stages of coagulation.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Pelvic CUS provides information that is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of the direct bearing on patient care, the rendering of a diagnosis by CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of ectopic pregnancy and other pathologic conditions of the pelvis, emergency interventions may be mandated by the diagnostic findings of the CUS of the pelvis. For this reason, CUS of the pelvis should occur as soon as possible when the clinical decision is made that the patient needs a sonographic evaluation.

Physicians of a variety of medical specialties may perform CUS of the pelvis. Training should be in accordance with specialty or organizational specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute presentations related to the pelvic area, as outlined above. Similarly, Advanced Practice Providers (Nurse Practitioners and Physician Assistants) may be trained in this skill if adequately supervised.

4. Specifications for Individual Examinations

a. General – Organs and structures evaluated by pelvic CUS are scanned systematically in real time through all tissue planes in at least two orthogonal directions. The primary focus of the pelvic CUS is the identification of an intrauterine pregnancy which, in most patients, will rule out the possibility of an ectopic/heterotopic pregnancy. Additionally, identification of greater than physiologic free fluid, or clotted blood, particularly in the setting of a pregnant patient with no visible IUP is part of a primary focused exam. Pelvic sonographic evaluations for other pelvic pathology, as described in "Extended Indications," are performed based on the clinical situation and appropriate physician's sonographic experience.

b. Technique

i. Identification:

1. Uterus: The uterus should be examined in at least two planes, the short- and long-axis, to avoid missing important findings that may lie off midline or outside the endometrial canal, such as an interstitial pregnancy or fibroids. The uterus should be traced from the fundus to the cervix, confirming that it is actually the uterus that is being scanned rather than a gestational reaction from an ectopic pregnancy. Further confirmation can be provided by connecting the hyperechoic vaginal stripe to the cervix and subsequently to the endometrial stripe of the uterus. An eccentrically located pregnancy less than 5 to 7 mm[5] from the edge of the myometrium is concerning for being an interstitial ectopic. Similarly, a sac that is in close approximation to the cervix or c-section scar and any of these findings should be referred for comprehensive imaging.
2. Fetus: An intrauterine pregnancy is confirmed by the presence of a yolk sac a hyperechoic ring, surrounded by an anechoic gestational sac, or fetal pole within the uterus. An intrauterine sac without a yolk sac or fetal pole visualized does not confirm pregnancy and should be termed a "nonspecific endometrial sac" to avoid any confusion about a gestation being present or not. Fetal viability is evaluated with fetal cardiac activity or fetal movement. Fetal heart rate can be assessed utilizing M-mode with fetal heart rate calculation. Normal fetal cardiac activity in the first trimester is 110 to 180 beats per minute. Do not apply pulsewave Doppler to assess the fetal heart rate. Crown

rump length estimates gestational age in the first trimester and is measured from the crown of the fetal head to the bottom of the torso and does not include the yolk sac.

3. Cul-de-sac: The cul-de-sac or Pouch of Douglas may contain a small amount of physiologic fluid in the normal female pelvis. In the absence of an IUP in a pregnant patient, fluid in the Pouch of Douglas raises the concern for ruptured ectopic pregnancy, and fluid in Morison's Pouch may be indicative of the need for operative intervention. Other causes of free fluid in the pelvis include blood (eg, ruptured ovarian cyst) and pus (eg. tubo-ovarian abscess).
4. Adnexa: The adnexa is the potential space between the uterus and the iliac vessels and contains the ovary, fallopian tube, and associated vessels and ligaments. Systematic evaluation of the adnexa in longitudinal and transverse plane is recommended, particularly in the setting when no IUP is identified.
5. Ovaries: When visualized, each ovary should also be scanned in at least two planes, short-and long-axis. This technique should enable visualization of possible masses juxtaposed to the ovary as well as cysts located on the periphery of an ovary. In the first trimester patient with pain, evaluating the ovaries may identify an unexpected cause for pain. For instance, ovarian masses, cysts, or ovarian torsion may be the etiology of a patient's pain. Cyst or mass greater than 5 cm or an ovary with single greatest measurement greater than 5cm have increased risk of ovarian torsion. Additional features include presence of any mass, ovarian edema (stromal heterogeneity), follicles displaced to the periphery, abnormal adnexa placement (toward the midline), and free fluid in the pelvis. Due to the dual blood supply of the ovary, abnormal blood flow is specific; however, normal color or power Doppler and pulsed wave Doppler does not rule out adnexal torsion.
6. Fallopian tubes: The normal fallopian tube may be visualized as it originates from the cornua of the uterus. Visualization can be limited by significant bowel gas or enhanced when distended by fluid such as in hydrosalpinx or tubo-ovarian abscess.

ii. Real-time scanning technique:
   1. Overview: When first evaluating a patient with laboratory confirmed pregnancy it is useful to bring the ultrasound device into the room with you on the initial encounter. If an IUP is confirmed, there may not be any need for additional testing and the patient could be directly discharged with close ob/gyn follow up. When the transabdominal exam is nondiagnostic, transvaginal ultrasound can be performed at the patient's bedside in conjunction with the pelvic examination portion of the physical examination to limit the time a patient spends in the lithotomy position. It is recommended that a chaperone be present for any endovaginal examinations. In most instances, the transabdominal portion of the ultrasound exam should precede the transvaginal component as information regarding bladder fullness, position of the uterus, and anatomic variations can be appreciated. As well, in a certain percentage of patients, an intrauterine pregnancy will be documented, thereby minimizing the need to perform the endovaginal ultrasound exam.
   2. Transabdominal: With the patient in the supine position the transducer is placed on the lower abdomen just above the symphysis pubis and the pelvic organs are examined through a window of the preferably distended bladder. Under distention of the urinary bladder may limit visualization of the uterus and other pelvic organs. Images are obtained in sagittal and transverse planes. To optimally image the uterus, the transducer is aligned with the long axis of the uterus, which is often angled right or left of the midline cervix. The adnexa are best examined in the transverse plane, angling the ultrasound beam to the right or left with the uterus in view.
   3. Transvaginal: For the transvaginal examination, optimal imaging is achieved with an empty bladder and the patient in lithotomy position. The probe may be placed in the

vagina by the patient or the examiner. The uterus is examined entirely in two planes. When in the sagittal plane the probe indicator is toward the ceiling and the examiner sweeps the transducer laterally to each side to visualize the uterus in its entirety. The transducer is then rotated 90 degrees counterclockwise to obtain a coronal view. The transducer can then be angled anteriorly, posteriorly, and to each side to obtain a full assessment of the uterus.

After the sagittal and coronal planes of the uterus have been fully interrogated, other structures in the pelvis can be visualized, such as the cul-de-sac and adnexa. The cul-de-sac is posterior to the uterus and the ovaries are located lateral to the uterus and usually lie anterior to the internal iliac veins and medial to the external iliac vessels.

The intracavitary probe can be utilized to elicit sonographic tenderness of pelvic structures similar to Sonographic Murphy's Sign in the right upper quadrant. When the structure of interest, for example the cervix is directly in contact with the probe, applying pressure to the visualized structure can ascertain if there is sonographic cervical motion tenderness supporting the diagnosis of pelvic inflammatory disease.[6] Similarly, sonographic adnexal tenderness may support ovarian etiology such as ovarian torsion or pelvic inflammatory disease/tubo-ovarian abscess over other organ systems.[7]

5. Documentation

In performing CUS of the pelvis, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record and images stored in a PACS system when possible. Documentation should include the indication for the procedure, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as part of the medical record and done so in accordance with facility policy requirements. In scenarios where time for documentation is limited, providers should ensure that images are available to consultant teams and document when clinically appropriate.

6. Equipment Specifications

A curved linear array abdominal transducer with a range of approximately 2.0 to 5.0 MHz as well as an endovaginal transducer with an approximate range of 6.0 to 10.0 MHz range is used for pelvic ultrasound. Color Doppler and pulsed wave Doppler are essential if an assessment of blood flow is to be made. Both hand-held and cart-based ultrasound machines may be used, depending on the location and setting of the examination. There is no indication to interrogate the fetus with pulsed wave Doppler, therefore avoiding high-energy ultrasound in early pregnancy. Further, all pelvic ultrasound studies should be kept to a reasonably limited amount of time when sensitive tissue such as the fetus is involved.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education

Policies and procedures related to quality, safety, infection control, and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines. Transvaginal ultrasound transducers require high-level disinfection after use and one should adhere to institutional guidelines and practices when using this device.

References

1. Barrenetxea G, Barinaga-Rementeria L, Lopez de Larruzea A, Agirregoikoa JA, Mandiola M, Carbonero K. Heterotopic pregnancy: two cases and a comparative review. *Fertil Steril*. 2007;87(2):417.
2. Beals T, Naraghi L, Grossestreuer A, Schafer J, Balk D, Hoffmann B. Point of care ultrasound is associated with decreased length of stay for symptomatic early pregnancy. *Am J EmergMed*. 2019;37(6):1165-8.
3. Stein JC, Wang R, Adler N. Emergency physician ultrasonography for evaluating patients at-risk for ectopic pregnancy: A Meta-Analysis. *Ann Emerg Med*. 2010;56(6):674-83.
4. Panebianco N, Shofer F, O'Conor K, Wihbey T, Mulugeta L, Baston CM, et al. Emergency department patient perceptions of transvaginal ultrasound for complications of first trimester pregnancy. *J Ultrasound Med*. 2018 Aug;37(8):1965-75.
5. Kaakaji Y, Nghiem HV, Nodell C, TC Winter. Sonography of obstetric and gynecologic emergencies: Part I, obstetric emergencies. AJR *Am J Roentgenol*. 2000;174(3):641-9.
6. Lewiss RE, Saul T, Goldflam K. Sonographic cervical motion tenderness: A sign found in a patient with pelvic inflammatory disease. *Crit Ultrasound J*. 2012;4(1):20.
7. Tayal VS, Cean CA, Norton HJ, Schulz CJ, Bacalis KN, Bliss S. Prospective comparative trial of endovaginal sonographic bimanual examination versus traditional digital bimanual examination in nonpregnant women with lower abdominal pain with regard to body mass index classification. *J Ultrasound Med*. 2008;27(8):1171-7.

Gastrointestinal/Gut

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of the gastrointestinal system (GI CUS). Abdominal pain is a common presenting complaint in the emergency department. Among many possible etiologies, emergency ultrasound may be diagnostic for small or large bowel obstruction, diverticulitis and pneumoperitoneum. If bowel obstruction or diverticulitis is identified, CUS may help identify high risk features.

CUS of the gut is a component of the overall clinical evaluation of a patient with abdominal pain. It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. While other tests may provide information that is more detailed than CUS, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Further, CUS avoids the delays, costs, specialized technical personnel, and the biohazardous potential of radiation. These advantages make CUS a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as bowel obstruction, diverticulitis, and pneumoperitoneum as well as other causes of abdominal pain.

2. Indications/Limitations

a. Primary
   i. Identification of small bowel obstruction (SBO)
   ii. Assessment for acute appendicitis in pediatric patients (see pediatrics chapter)
b. Extended
   i. Identification of large bowel obstruction (LBO)
   ii. Assessment for acute appendicitis in adult patients

iii. Identification of acute colonic diverticulitis (ACD)
iv. Identification of pneumoperitoneum
v. Confirmation of orogastric/nasogastric or percutaneous gastrostomy tube location/placement

c. Contraindications
   i. There are no absolute contraindications to GI CUS. There may be relative contraindications based on specific features of the patient's clinical situation.
d. Limitations
   i. CUS of the gut is a single component of the overall and ongoing evaluation. Since it is a focused examination, CUS does not identify all abnormalities or diseases of the gut. CUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. If the findings of the CUS are equivocal, additional diagnostic testing may be indicated.
   ii. The primary focus of gut CUS is to identify findings suggestive of small bowel obstruction. Extended uses of GI CUS include the identification of appendicitis in adult patients, LBO, pneumoperitoneum, diverticulitis, and confirmation of orogastric/nasogastric or percutaneous gastrostomy tube location. Other entities, including intestinal tumors or functional abnormalities of the gut are typically not within scope of a CUS exam.
   iii. Examination of the gut may be technically limited by:
      1. Obese habitus
      2. Bowel gas
      3. Abdominal tenderness
      4. Surgical wounds/dressings
      5. Pneumoperitoneum
e. Pitfalls
   i. Fluid filled loops of bowel without dilation may be present in both gastrointestinal hemorrhage and diarrheal disease.
   ii. Differentiating small versus large bowel relies on observance of the ultrasound characteristics specific to each type of bowel. If large bowel, with its larger normal diameter, is mistaken for small bowel, an erroneous diagnosis of small bowel obstruction may occur.
   iii. Movement from the transmission of diaphragm breathing excursion may lead to error in misinterpreting akinetic bowel.
   iv. Both ileus and bowel obstruction demonstrate dilated non-compressible loops of bowel. A sonographic transition point where non-dilated bowel is seen distal to dilated bowel can help diagnose SBO as a sonographic transition point will not be seen in ileus.
   v. Obesity, overlying or adjacent bowel gas, and the bladder/pelvic structures may prevent an adequate examination for diverticulitis and could prevent the identification of a deep space abscess associated with complicated diverticulitis. Any exam limitations should be identified and documented and may warrant further evaluation by alternative methods.
   vi. Colitis may cause some of the same changes seen in diverticulitis, such as bowel wall thickening and focal tenderness to probe pressure, leading to false positive diagnoses of diverticulitis.
   vii. Epiploic appendagitis may be confused with diverticulitis as pericolonic fatty inflammation is seen in both conditions but epiploic appendagitis can be differentiated from diverticulitis as there is no bowel wall thickening.
   viii. CUS is operator-dependent, and the quality and interpretation of images is heterogenous.
   ix. The presence of findings consistent with bowel obstruction or diverticulitis does not rule out the presence of other life-threatening causes of abdominal pain such as aortic aneurysm/dissection, bowel infarction, bowel perforation, or acute appendicitis.
   x. Intraluminal intestinal air may be mistaken for pneumoperitoneum if the anterior bowel wall cannot be differentiated from the parietal peritoneum.

xi. Reverberation/ring down artifact from the lung may be confused for reverberation artifact originating from within the parietal peritoneum. Careful attention to the location of the diaphragm will limit this pitfall.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the gut provides information that is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by GI CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of abdominal pain, emergency interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform gut ultrasound. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of bowel pathology, as outlined above.

4. Specifications for Individual Examinations

a. General – Organs and structures evaluated in GI CUS are scanned systematically in real time through all tissue planes in at least two orthogonal directions. The primary focus of the GI CUS examination is the identification of dilated loops of bowel associated with small bowel obstruction. Evaluation of the stomach for the confirmation of orogastric/nasogastric or percutaneous gastrostomy tube location/placement as well as the identification of pneumoperitoneum, investigating diverticulitis, focal segments of loops of bowel with wall edema, diverticula, and inflamed peri-mesenteric fat stranding as described in "Extended Indications," are performed based on the clinical situation and the emergency physician's ultrasound experience.

b. Technique

i. Identification:

1. Small bowel: The normal small bowel can be found throughout the entire abdomen and contains air, liquid, and chyme, partially digested food contents. Its varied appearance depends on the makeup and proportions of these luminal contents. Healthy small bowel is both non-dilated, diameter < 25 millimeters (mm), and demonstrates periodic peristalsis. The circular mucosal folds of the valvulae conniventes, otherwise referred to as plicae circulares, are not often visualized unless the segment of small bowel is fluid filled. They become readily apparent when the small bowel segment is fluid filled and dilated. Orientation of images of the small bowel are conventionally defined with respect to their axis in both transverse and longitudinal anatomic planes.
2. Large bowel: The large intestine can be identified by its expected location when scanning its approximate course, up the right flank (ascending colon), transversely across the upper abdomen (transverse colon) and down the left flank (descending colon) into the suprapubic region (sigmoid colon) and the presence of haustra. A normal large bowel has a diameter less than 50 mm and wall thickness under 5 mm. Non-obstructed large bowel typically contains large volumes of hyperechoic gas within the lumen that can obscure deeper structures.
3. Peritoneum: The peritoneum is identified on ultrasound as an echogenic line located posterior or deep to the abdominal musculature and its associated muscle sheath.
4. Stomach: The stomach is identified in the left upper quadrant as a well circumscribed fluid and air containing structure when not empty.

ii. Real-time scanning technique:
   1. Small and large bowel obstruction: A general-purpose curved array abdominal probe (5-2 MHz) or a small footprint or phased array probe is generally used. A linear transducer (10-5 MHz) may be selected in thin or pediatric patients. The abdomen should be systematically examined. A "lawn-mower" scanning technique using graded compression has been described so as not to miss areas of bowel. Begin in the inferior portion of the right lower quadrant with the transducer in transverse orientation. Using gentle graded compression, set the depth to visualize the structures of the retroperitoneum (iliopsoas muscle and iliac vessels) at the base of the ultrasound screen. While maintaining graded compression, slowly slide the transducer cephalad along the right paracolic gutter until the inferior border of the liver is reached. Slide the probe slightly midline and scan caudally until the inferior portion of the abdomen is reached. With each longitudinal pass up and down the abdomen, like mowing a lawn, slide the transducer a little more to the patient's left, until the entire abdomen is scanned. If dilated, fluid-filled loops of bowel are identified, these areas of interest are scanned in both transverse and longitudinal axis.
   2. Diverticulitis: A general-purpose curved array abdominal probe (5-2 MHz) or a small footprint or phased array probe is generally used. When scanning the large intestine, the entire colon should be imaged methodically, following its expected course. For left-sided diverticulitis, one can start in the superior portion of the left paracolic gutter just below the inferior costal border. In transverse orientation, slide the transducer inferiorly along the descending colon while maintaining gentle graded compression. Approximately at the level of the anterior superior iliac spine, rotate the probe longitudinally and follow the sigmoid colon by sliding medially and inferiorly towards the bladder. It is important to focus on areas where the patient reports maximal pain or exhibits tenderness. If body habitus permits, use of a high frequency (10-5 MHz) linear probe will provide higher resolution images of the large intestine that may be helpful in identifying pathology such as thickened walls, diverticula, and fat stranding. As with other CUS, areas of interest are scanned methodically through all tissue planes in at least two orthogonal directions.
   3. Pneumoperitoneum: Use of a high frequency (10-5 MHz) linear probe is ideal except in situations where body habitus requires a lower frequency probe capable of imaging to greater depth. A general-purpose curved array abdominal probe (5-2 MHz) or a small footprint or phased array probe is also appropriate. The parietal peritoneum may be imaged throughout the entire abdomen. Patient position can be optimized for detection of pneumoperitoneum as free air will rise to the highest position in the abdominal cavity. If the patient is supine, the probe is positioned in the most anterior (ventral) position of the abdomen and the peritoneum is imaged with a focus on the epigastric and right upper quadrant areas, where free air tends to accumulate. The patient can also be positioned in a left lateral decubitus position and the probe placed in the right hypochondrium or over the liver. Left lateral decubitus positioning allows for imaging over the liver where bowel, containing confounding intraluminal air, is much less likely to be present. When assessing for air between the diaphragm and liver, it may be beneficial to place the patient in a semi-recumbent or upright position as air may rise to the top.
   4. Gastric ultrasound for NGT location: A general-purpose curved array abdominal probe (5-2 MHz) or a small footprint or phased array probe is generally used. Three standard probe positions can be utilized to obtain complete views of the stomach. For views of the fundus, the probe is placed in the midaxillary line, mid torso (commonly at the level of the xiphoid process) with the probe indicator directed toward the patient's head. The spleen and left hemidiaphragm are identified. The probe is then fanned or angled anteriorly to visualize the stomach. If the ribs and their accompanying shadows interfere with imaging, the probe can be rotated to an intercostal position, parallel to the ribs. Positioning the probe in the epigastric area, perpendicular to the anterior abdominal wall,

with the indicator directed toward the patient's head provides a view of the antrum of the stomach with the left lobe of the liver, inferior vena cava and superior mesenteric vein as landmarks. Fanning or angling the probe toward the left subcostal area allows views of the gastric body.

5. Appendicitis in an adult - see pediatric appendicitis chapter

iii. Key components of the exam:

1. Bowel obstruction: While methodically scanning up and down the abdomen, the sonographer searches for dilated hyperechoic segments of fluid filled bowel. Once identified, the dilated segment is visualized in two planes and its diameter measured. Small bowel that is larger than 25 mm in diameter is abnormal and may be indicative of obstruction or ileus. The presence of a transition point with collapsed distal bowel will differentiate between an obstruction and an ileus. The upper limit for normal large bowel is 50 mm in diameter which is differentiated from small bowel by the absence of valvulae conniventes or plicae circulares. The area is then investigated for the presence or absence of peristalsis which is best observed during long-axis view of the bowel and surrounding free fluid.
2. Diverticulitis: While methodically scanning the course of the large intestine, focus on the most common locations for diverticulitis (descending and sigmoid colon) and areas where the patient reports pain or tenderness when the probe is applied. Note diverticula and examine the colon for wall thickening (wall thickness measuring greater than 4-5 mm) and associated pericolic fat findings of increased echogenicity or decreased compressibility consistent with inflammation. Both longitudinal and transverse views of the colon should be obtained. A meta-analysis of the test accuracy of ultrasound found no significant difference in the diagnostic accuracy of ultrasound versus computed tomography and has been shown to have a sensitivity of 77 to 98% and a specificity of 80 to 99%.[1-3]
3. Pneumoperitoneum: While systematically scanning the parietal peritoneum, take note of areas of the peritoneum which appear more echogenic or are associated with shadowing or reverberation artifact. Avoid sustained pressure on the abdomen as this may displace free air, making it difficult to detect. The scissors maneuver may be utilized to confirm findings of pneumoperitoneum. This maneuver utilizes intermittent pressure in the right paramedian epigastrium to intermittently displace free air, causing associated reverberation artifact to disappear with pressure and reappear when pressure is released. With the patient supine, if no findings of pneumoperitoneum are seen while scanning the anterior (ventral) abdomen, place the patient in the left lateral decubitus position and scan over the liver as this may increase sensitivity for free air and avoid bowel loops and their potentially confounding intraluminal air.
4. Orogastric/nasogastric or percutaneous gastrostomy tube confirmation: Gastric views should be methodically interrogated for the presence of the tube in the stomach which will appear as an echogenic linear structure when the tube is visualized in its longitudinal plane. If the tube cannot be readily identified, gentle agitation of the tube and application of color flow doppler to help detect movement of the tube can be utilized. Real time guidance of percutaneous gastrostomy tube placement may aid in visualization of the tube during its entire course through the established tract. If the tube cannot be visualized within the stomach using the aforementioned methods, air or a mixture of air and normal saline have been injected through the tube to cause dynamic echogenic fog to exit the tip within the stomach, indirectly confirming the tube's gastric location. One may also scan the anterior neck and confirm that the tube is in the esophagus before advancing it into the stomach. The esophagus is generally located to the left of the trachea and having a cooperative patient not in c-spine precautions turn their head to the right may improve

visualization. If the tube is in the esophagus the air-filled tube may cause a "double track" sign, similar to when assessing for esophageal intubation.

5. Appendicitis: See pediatric appendicitis chapter.

iv. Pathologic findings:

1. Bowel obstruction - This diagnosis is based on the entire clinical picture in addition to the findings of the CUS.
   a. Dilated non-compressible fluid filled loops of small bowel (diameter > 25 mm) proximal to collapsed small bowel or ascending colon, or dilated fluid filled loops of large bowel (diameter > 50 mm). With a small bowel obstruction, the plicae circulares are prominently visualized (keyboard sign) and can be used to differentiate from the haustra seen in large bowel.
   b. Peristalsis of the intestinal wall with "to-and-fro" movement of the fluid filled bowel demonstrates lack of forward flow of the luminal contents against a transition point and suggests a bowel obstruction.
   c. Later findings of a high grade small bowel obstruction include complete akinesis of the dilated fluid filled loop of bowel with thickened edematous bowel wall (>3 mm). As intraluminal pressure increases, flattening or loss of the plicae circulares may occur. Finally, the presence of peritoneal free fluid or air may indicate perforation or ischemic bowel with translocation of intraluminal contents.
2. Diverticulitis - This diagnosis is based on the entire clinical picture in addition to the findings of the CUS.
   a. Presence of a diverticulum (outpouching from the bowel wall).
   b. Segmental, hypoechoic thickened bowel wall (> 4mm, measured from outer to inner wall).
   c. Pericolonic fat changes, specifically echogenic surrounding fat which has minimal compressibility.
   d. Focal tenderness on compression with a probe in conjunction with the above findings.
   e. Additional findings may include a fecalith, adjacent free fluid or a pericolonic fluid collection with internal debris or acoustic "dirty" shadowing consistent with abscess, and the pseudokidney sign - a thick hypoechoic wall with a central hyperechoic center resembling a kidney.
3. Pneumoperitoneum - the following CUS findings are consistent with a diagnosis of pneumoperitoneum:
   a. Enhancement of the peritoneal stripe: in the area where free intraperitoneal air abuts the parietal peritoneum, the peritoneum will have a more echogenic, thickened appearance.
   b. "Dirty" shadowing (shadowing that is not pure black) that appears to be originating from the parietal peritoneum.
   c. Ring down or reverberation artifact associated with the parietal peritoneum.
   d. Inability to see typical anatomy directly inferior to the associated artifacts.
   e. Other signs may include intra-abdominal free fluid and air (echogenic foci) within the free fluid
4. Appendicitis - see pediatric appendicitis chapter
5. Other pathologic findings of the small and large intestine are generally beyond the scope of the CUS.

5. Documentation

In performing CUS of the gut, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Documentation of the gastrointestinal CUS

should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and in accordance with facility policy requirements.

6. Equipment Specifications
A curvilinear abdominal transducer or a small footprint or phased array probe with frequencies of 5-2 MHz can be utilized for all GI CUS indications. A linear transducer (10-5 MHz) may be selected in thin or pediatric patients for detection of bowel obstruction or to obtain higher resolution images of large bowel when examining for diverticulitis or the parietal peritoneum when examining for pneumoperitoneum. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education
Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Laméris W, van Randen A, Bipat S, Bossuyt PM, Boermeester MA, Stoker J. Graded compression ultrasonography and computed tomography in acute colonic diverticulitis: meta-analysis of test accuracy. *Eur Radiol*. 2008;18(11):2498-511.
2. Pradel JA, Adell JF, Taourel P, Djafari M, Monnin-Delhom E, Bruel JM. Acute colonic diverticulitis: prospective comparative evaluation with US and CT. *Radiology.* 1997;205(2):503-12.
3. Schwerk WB, Schwarz S, Rothmund M. Sonography in acute colonic diverticulitis. A prospective study. *Dis Colon Rectum.* 1992;35(11):1077-84.

Other Related Resources

1. Helou N, Abdalkader M, Abu-Rustum RS. Sonography: first-line modality in the diagnosis of acute colonic diverticulitis? *J Ultrasound Med*. 2013;32(10):1689-94.
2. Hoffmann B, Nürnberg D, Westergaard MC. FoCUS on abnormal air: diagnostic ultrasonography for the acute abdomen. *Eur J Emerg Med.* 2012;19(5):284-91.
3. Rosano N, Gallo L, Mercogliano G, Quassone P, Picascia O, Catalano M, et al. Ultrasound of small bowel obstruction: A pictorial review. *Diagnostics (Basel).* 2021;11(4):617.
4. Tsujimoto H, Tsujimoto Y, Nakata Y, Akazawa M, Kataoka Y. Ultrasonography for confirmation of gastric tube placement. *Cochrane Database Syst Rev*. 2017;4(4):CD012083.
5. Wale A, Pilcher J. Current role of ultrasound in small bowel imaging. *Semin Ultrasound CT MR*. 2016;37(4):301-12.

Kidney and Bladder

1. Introduction
The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the kidneys and bladder in patients suspected of having diseases involving the urinary tract.

Clinical ultrasound of the kidneys and urinary tract may identify both normal and pathological conditions. The primary indications for this application of CUS are in the evaluation of obstructive

uropathy and acute urinary retention. The evaluation of perirenal structures and the peritoneum for perirenal fluid is considered in the criteria for trauma CUS.

CUS of the kidneys and urinary tract occurs as a component of the overall clinical evaluation of a patient with possible urinary tract disease. It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. While other tests may provide information that is more detailed than CUS, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Further, CUS avoids the delays, costs, specialized technical personnel, the administration of contrast agents and the biohazardous potential of radiation. Specifically, research has shown that CUS is useful for diagnosing nephrolithiasis and has high specificity for detecting hydronephrosis linked to obstructing ureteral stones in renal colic.[1]

Additionally, use of CUS has been shown to reduce length of stay in patients presenting with acute flank pain.[2] In an NIH funded multicenter trial assessing CUS, radiology ultrasound, vs computer tomography (CT) in patients with suspected nephrolithiasis, patients in the ultrasound arms had less cumulative radiation exposure, without significant difference in high-risk diagnoses with complications, serious adverse events, pain scores, return emergency department visits, or hospitalizations.[3] These advantages make US a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as acute renal colic and urinary retention.

2. Indications, Limitations, and Pitfalls

a. Primary
   i. The rapid evaluation of the urinary tract for sonographic evidence of obstructive uropathy and/or urinary retention in a patient with clinical findings suggestive of these diseases.

b. Extended
   i. Causes of obstructive uropathy
   ii. Causes of acute hematuria
   iii. Causes of acute renal failure
   iv. Infections and abscesses of the kidneys
   v. Renal cysts and masses
   vi. Gross bladder and prostate abnormalities
   vii. Renal trauma
   viii. Foley catheter placement/confirmation/evaluation

c. Contraindications: No absolute contraindications exist. Contraindications are relative, based on specific features of the patient's clinical condition including obesity, trauma, renal transplant.

d. Limitations
   i. CUS of the kidney and urinary tract is a single component of the overall and ongoing evaluation of an emergency department patient. Since it is a focused examination, the scope of CUS is not intended to identify all abnormalities or diseases of the urinary tract. CUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. If the findings of the CUS are equivocal, additional diagnostic testing may be indicated.
   ii. Examination of the kidneys and collecting system may be technically limited by:
      1. Patient habitus including obesity
      2. Paucity of subcutaneous fat
      3. Narrow intercostal spaces
      4. Bowel gas
      5. Abdominal or rib tenderness

6. An empty bladder

e. Pitfalls
   i. When bowel gas or other technical factors prevent a complete real-time scan through all tissue planes, the limitations of the examination should be identified and documented. As is customary in emergency practice, such limitations may mandate further evaluation by alternative methods, as clinically indicated.
   ii. Hydronephrosis may be mimicked by several normal and abnormal conditions including dilated renal vasculature, renal sinus cysts, and bladder distension. Medullary pyramids may mimic hydronephrosis, especially in young patients. Hydronephrosis is a common finding in third-trimester pregnancy. Appendicitis, diverticulitis, cholecystitis, and mesenteric adenitis have also been found concurrently with hydronephrosis.[4]
   iii. The presence of obstruction may be masked by dehydration.
   iv. Patients with an acutely symptomatic abdominal aortic aneurysm may present with symptoms suggestive of acute renal colic.
   v. Regardless of pain laterality, both kidneys should be imaged in order to identify the presence of either unilateral kidney or bilateral disease processes.
   vi. The bladder should be imaged as part of CUS of the kidney and urinary tract. Many indications of this CUS exam are caused by conditions identifiable in the bladder.
   vii. Variations of renal anatomy are not uncommon and may be mistaken for pathologic conditions. These include reduplicated collection systems, unilateral, bipartite, ectopic and horse-shoe kidney.
   viii. Absence of hydronephrosis does not rule out a ureteral stone. Many ureteral stones, especially small ones, do not cause hydronephrosis.
   ix. Renal stones smaller than 3 mm are usually not identified by current sonographic equipment. Renal stones of all sizes may be missed and are usually identified by the shadowing they cause as their echogenicity is similar to that of surrounding renal sinus fat. Color doppler may be used to augment diagnosis of renal or ureteral stones as such stones will generate a tell-tale "twinkling" artifact.[5]

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the kidneys and urinary tract provides information upon which immediate decisions for further evaluation, management, and interventions are based. Rendering a diagnosis by CUS impacts patient care directly and qualifies as the practice of medicine. Therefore, performing and interpreting CUS is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many conditions of renal pathology, emergency interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform renal ultrasound examinations. Training should be in accordance with specialty, organization, or institutional specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute renal pathology, as outlined above.

4. Specifications for Individual Examinations

a. General: An attempt should be made to image both kidneys and the bladder in patients with suspected renal tract pathology undergoing CUS. In addition, hydronephrosis and urinary retention are frequently unsuspected causes of abdominal pain and may be recognized in the course of other abdominal or retroperitoneal CUS examinations.
b. Technique

i. Identification: The kidneys are more easily identified in their longitudinal axis. They are paired structures that lie oblique to every anatomic plane and at different levels on each side. Their inferior poles are anterior and lateral to their superior poles. Both hila are also directed obliquely. Orientation is defined with respect to the axes of the organ of interest (longitudinal, transverse, and oblique), rather than standardized anatomic planes (sagittal, coronal, oblique and transverse). The long axis of the kidney approximates the intercostal spaces and longitudinal scans may be facilitated by placing the transducer plane parallel to the intercostal space. By convention, the probe indicator is always toward the head or the vertebral end of the rib on both the right and left sides. Transverse views of the kidneys are therefore usually transverse to the ribs, resulting in prominent rib shadows that may make visualizing the kidneys more difficult unless a small footprint or phased array probe is available. Transverse views are obtained on both sides by rotating the probe 90º counterclockwise from the plane of the longitudinal axis.

ii. Real-time scanning technique:
    1. Overview: The kidneys are retroperitoneal in location and are usually above the costal margin of the flanks in the region of the costovertebral angle. A general-purpose curved array abdominal probe with a frequency range of between 2.0 -5.0 MHz is generally used. A small footprint or phased array probe may facilitate scanning between the ribs but may require several windows in the longitudinal plane if the kidney is long, or superficial. Images of both kidneys should be obtained in the longitudinal and transverse planes for purposes of comparison and to exclude absence of either kidney. The bladder should be imaged to assess for volume, evidence of distal ureteral obstruction and for calculi. As with other CUS exams, the organs of interest are scanned in real-time through all tissue planes in at least two orthogonal directions.
    2. Details of technique: The right kidney may be visualized with an anterior subcostal approach using the liver as a sonographic window. Imaging may be facilitated by having the patient in the left lateral decubitus position or prone. Asking the patient to take and hold a deep breath may serve to extend the liver window so that it includes the inferior pole of the kidney. Despite these techniques, parts or the entire kidney may not be seen in this view due to interposed loops of bowel, in which case the kidney should be imaged using an intercostal approach in the right flank between the anterior axillary line and midline posteriorly. For this approach, the patient can be placed in the decubitus position with a bolster under the lower side with the arm of the upper side fully abducted, thus spreading the intercostal spaces. Separate views of the superior and inferior poles are often required to adequately image the entire kidney in its longitudinal plane. To obtain transverse images, the transducer is rotated 90º counterclockwise from the longitudinal plane. Once in the transverse plane, the transducer can be moved superiorly and medially, or inferiorly and laterally to locate the renal hilum. Images cephalad to the hilum represent the superior pole and those caudad represent the inferior pole. The left kidney lacks the hepatic window, necessitating an intercostal approach similar to the one described above for the right flank.

       The bladder is imaged in two planes: transverse (marker toward the patient's right) and sagittal (marker toward the patient's head), respectively. It is often identified cranial to pubic symphysis. Ideally, the bladder is scanned prior to voiding and again post-void if outlet obstruction is a concern. The kidneys should be scanned after voiding to avoid artifactual hydronephrosis. Such ideal conditions are rarely met with the exigencies of CUS and emergency care.

       To measure bladder volume, one must obtain the maximal length (longitudinal), width (transverse) and height (anteroposterior) measurements of the bladder. The length is only

obtainable in the sagittal plane, and width only in the transverse plane. The height can be measured in either sagittal or transverse planes; however, it should only be measured once. Most machines will calculate a volume. All three measurements are multiplied in centimeters by a coefficient (shape-dependent, with a common default of 0.72) to receive a volume in milliliters.[6]

3. Key components of the examination: The kidneys should be studied for abnormalities of the renal sinus and parenchyma. Under normal circumstances, the renal collecting system contains no urine, so that the renal sinus is a homogeneously hyperechoic structure. A distended bladder can cause mild hydronephrosis in normal healthy adults. Several classifications of hydronephrosis have been suggested. One that is easily applied and widely utilized is Mild or Grade I (any hydronephrosis up to Grade II), Moderate or Grade II (the calices are confluent resulting in a "bear's paw" appearance), or Severe or Grade III (the hydronephrosis is sufficiently extensive to cause effacement of the renal parenchyma). Other abnormalities identified including cysts, masses and bladder abnormalities may require additional diagnostic evaluation. Measurements may be made of the dimensions of abnormal findings and the length and width of the kidneys. Such measurements are rarely relevant in the CUS examination.

   Troubleshooting a Foley catheter is centered around identifying the fluid-filled balloon. Normally a well-positioned, well-functioning Foley will have a fully decompressed bladder and only the balloon will be visualized.[7] In the setting of malfunction, one can assess the location of the balloon for malpositioning, including the balloon being in a diverticulum, prostate, urethra, or vagina.[8]

5. Documentation

In performing CUS of the kidneys and urinary tract, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A curved array abdominal transducer with a frequency range of between 2.0 -5.0 MHz is generally used. A small footprint or phased array probe may facilitate scanning between the ribs. A higher frequency 5.0-7.0 MHz transducer may give better resolution in children and smaller adults. Both portable and cart-based ultrasound machines may be used, depending upon the location of the patient and the setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Wong C, Teitge B, Ross M, Young P, Robertson HL, Lang E. The accuracy and prognostic value of point-of-care ultrasound for nephrolithiasis in the emergency department: A systematic review and meta-analysis. *Acad Emerg Med*. 2018;25(6):684-98.

2. Park YH, Jung RB, Lee YG, Hong CK, Ahn JH, Shin TY, et al. Does the use of bedside ultrasonography reduce emergency department length of stay for patients with renal colic?: a pilot study. *Clin Exp Emerg Med*. 2016;3(4):197-203.
3. Smith-Bindman R, Aubin C, Bailitz J, Bengiamin RN, Camargo CA Jr, Corbo J, Dean AJ, et al. Ultrasonography versus computed tomography for suspected nephrolithiasis. *N Engl J Med*. 2014;371(12):1100-10.
4. Daniels B, Gross CP, Molinaro A, et al. STONE PLUS: Evaluation of emergency department patients with suspected renal colic, using a clinical prediction tool combined with point-of-care limited ultrasonography *Ann Emerg Med*. 2016; 67(4):439-48.
5. Laher AE, McDowall J, Gerber L, Aigbodion SJ, Enyuma COA, Buchanan S, et al. The ultrasound 'twinkling artefact' in the diagnosis of urolithiasis: hocus or valuable point-of-care-ultrasound? A systematic review and meta-analysis. *Eur J Emerg Med*. 2020;27(1):13-20.
6. Bih LI, Ho CC, Tsai SJ, Lai YC, Chow W. Bladder shape impact on the accuracy of ultrasonic estimation of bladder volume. *Arch Phys Med Rehab.* 1998;79(12):1553-6.
7. Koratala A, Bhattacharya D, Kazory A. Point of care renal ultrasonography for the busy nephrologist: A pictorial review. *World J Nephrol*. 2019;8(3):44-58.
8. Wu TS, Pegerson B. [Internet]. Finding the Foley. EPMonthly; 2015 Jan [cited 2021Jun10]. Available from: https://epmonthly.com/article/soundings-finding-the-foley/

Lung and Pleura

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of the chest to evaluate for causes of dyspnea.

There are several primary and extended indications for lung ultrasound. It can be used for the rapid diagnosis of acute pneumothorax and is particularly sensitive for ruling out the presence of pneumothorax and pleural effusion.[1-3] Thoracic ultrasound may also be used in the diagnosis of abnormal interstitial fluid in the lungs as seen in congestive heart failure, ARDS, pulmonary contusion, and interstitial infections.[4] Advantages of thoracic ultrasound are rapid deployment in critically ill patients with immediate diagnostic information without the need to transport or transfer the patient. Additionally, thoracic ultrasound can be performed with portable or hand-held ultrasound machines in remote or resource limited clinical situations. During the COVID-19 pandemic, thoracic ultrasound was sometimes used to reduce the number of chest radiographs and CTs performed, thereby decreasing the number of healthcare workers exposed to these patients and sparing personal protective equipment.[5] Additionally, a provider may integrate the lung exam with sonographic evaluation of multiple organ systems within the context of the clinical scenario. It is important to understand that often thoracic ultrasound is a part of the resuscitative effort and is an emergent procedure. Other procedures may take precedence or may proceed simultaneously. It is not a comprehensive imaging test such as computerized tomography however, the literature demonstrates sensitivities and specificities greater than traditional imaging modalities such as chest radiography.[1,2,4,6,7,8] The judicious use of ultrasound can add to the rapid, non-invasive, and dynamic evaluation of the critical patient.[9]

2. Indications/Limitations

a. Primary
   i. Acute pneumothorax
   ii. Abnormal collections of pleural fluid
   iii. Presence of interstitial lung fluid

1. CHF
2. ARDS

b. Extended
   i. Presence of interstitial lung fluid beyond CHF/ARDS
      1. Pneumonia
         a. Viral
         b. Bacterial
      2. Pulmonary contusion
   ii. Pulmonary fibrosis
   iii. Rib fractures
c. Contraindications
   i. Known tension pneumothorax requiring emergent intervention
d. Relative Contraindications
   i. Significant pain in the area to be scanned
   ii. Open wounds or dressings in area to be scanned
e. Limitations
   i. Morbid obesity
   ii. While bedside thoracic ultrasound is more sensitive than chest X-ray for diagnosis of many pulmonary pathologies, the performance of the exam is dependent on the skill level of the sonologist.[10,11]
f. Pitfalls
   i. Absence of pleural sliding is not 100% specific for pneumothorax, as prior pleurodesis, pleural scarring, lung contusions, bronchial obstruction, and advanced bullous emphysema, may result in absence of lung sliding.
   ii. The presence of pleural sliding only excludes pneumothorax immediately under the transducer. It does not rule out the presence of pneumothorax in other parts of the chest.
   iii. Thoracic ultrasound does not exclude the presence of a pulmonary embolism
   iv. The presence of B-lines posteriorly in the supine patient may be a normal finding.[12]
   v. The presence of interstitial lung fluid on bedside thoracic ultrasound can be caused by many disease processes. Sonographic information should be correlated with history, physical exam, and with other clinical findings.
   vi. Motion of the transducer with respect to the patient's chest wall may give the impression of pleural motion, particularly when using M Mode, resulting in failure to identify pneumothorax.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Thoracic CUS is a useful tool for prompt diagnosis of many thoracic pathologies. Thoracic Ultrasound is a modality that may be utilized by a variety of providers in various specialties. Training should be in accordance with specialty or organization specific guidelines. Because of its direct bearing on patient care, the rendering of a diagnosis by chest CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of chest pathology, emergency interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

4. Specifications for Individual Examinations

a. General: Thoracic CUS is often performed simultaneously with other aspects of resuscitation. The transducer is placed systematically in each of the appropriate windows based on the clinical scenario and suspected pathology. The ultrasound images are interpreted in real-time as the exam

is being performed. Images should be saved to the medical record for purposes of documentation, quality assurance, and teaching.

b. Technique: Overview. The chest ultrasound examination requires little patient preparation except for positioning in the bed at an ergonomic height for the examiner. In the absence of pleural adhesions, a pneumothorax typically occurs in the most anterior aspect of the chest in a supine patient and at anterior lung the apex of an upright patient. Conversely, pleural effusions or hemothoraces tend to follow gravity and accumulate posteriorly and inferiorly in the costophrenic sulci. When evaluating a patient for pulmonary edema, the patient is often in a semi-recumbent or upright position. Traditionally, thoracic ultrasound is performed with the probe indicator positioned towards the patient's head and the transducer perpendicular to the ribs; however, scanning parallel to the ribs may be useful when assessing lung parenchyma at a specific location. When evaluating the lung bases via the liver and spleen, the sonologist should identify the solid organ below the diaphragm, and the thoracic cavity superior to the diaphragm, indirectly recognizable by mirror artifact of liver (on the right) and spleen (on the left).

c. Pathologic findings:
   i. Pneumothorax
      1. Anterior chest. In a supine trauma patient, the anterior chest is the most sensitive area to identify a pneumothorax. In this window, a linear array transducer is ideal, with the focal zone set at the pleural line. However, a curvilinear or phased array transducer may also be used, using their high frequency range, and with adjustment of the focal zone. The transducer is placed parallel and lateral to the sternum at the anterior most chest and the orientation marker is directed cephalad in a sagittal plane. Two ribs with distal shadowing and the pleural line beneath the ribs should be identified. The physician should evaluate for pleural sliding. Other findings that exclude pneumothorax under the transducer include "lung pulse" (motion of visceral pleura and lung in time with cardiac motion) and the presence of B-lines or Z-lines (see below for description of these findings).[13] The absence of any of these findings is highly suggestive of the presence of a pneumothorax. Conversely, the presence of the "lung point" sign (created by the site of transition between expanded and collapsed lung) is pathognomonic of the *presence* of pneumothorax. At each interspace, the sonologist should anchor the probe to the patient's chest wall using his/her examining hand, in order to minimize chest wall motion, which can be mistaken for lung sliding. The provider should ensure to interrogate each intercostal space from the apex to the diaphragm. The movement of the pericardium and the diaphragm should not be mistaken for either pleural sliding or the lung-point sign in the left chest. In most cases, the probe should be placed more laterally when examining the left chest in the region of the heart.
      2. Lateral chest. The technique for examining the lateral chest is identical to the anterior chest, except the physician will examine each interspace in the mid-axillary line.
      3. Posterior thorax. The technique for examining the posterior thorax is identical to the anterior chest, except the physician will examine each interspace on the patient's back. The patient is examined sitting up if possible. Ultrasound waves do not penetrate the scapulae, so these should be abducted by asking the patient to grasp the contralateral shoulder with each hand. The posterior lung fields are less useful for detection of a pneumothorax in a supine patient
      4. Abbreviated exam. In critical situations, an ultrasound exam of the entire chest may not be feasible. In such circumstances, the evaluation may be limited to a single location on each anterior hemothorax. This two-point exam may identify large pneumothoraces but miss a smaller pneumothorax.[14]
      5. M-Mode evaluation. M-Mode can be used to help identify or to document the presence of a pneumothorax. The M-mode sampling bar is placed in the middle of the intercostal space and the resulting M-Mode tracing is evaluated over time. In the normal patient a

linear pattern superficial to the pleural line is in sharp distinction to the granular pattern deep to it (the "seashore sign"). With pneumothorax, there is a horizontal linear pattern above and below the pleural line ("stratosphere sign" or "barcode sign").[15]

6. Power Doppler Evaluation. Similar to above the probe should be placed parallel to the sternum at the anterior most portion of the chest wall. The air is a barrier to the detection of apposition of the pleural surfaces and demonstrates an absence of a color signal.[16]

ii. Pleural effusion

1. Evaluation of the bilateral lung bases in the supine patient. Similar to the evaluation of fluid in Morison's Pouch and the left upper quadrants, the physician can rapidly identify fluid above the diaphragm. Typically, a curvilinear or phased array probe is placed in the anterior or mid-axillary line at the level of the xiphoid process, with the orientation marker directed cephalad. Following the identification of the kidney, liver/spleen, and diaphragm, the examiner rocks or slides the probe cephalad to evaluate above the diaphragm. Free fluid in the hemithorax will be identified as an anechoic or black area above the diaphragm. The presence of a "spine sign", which is the ability to visualize the thoracic spine above the diaphragm, can also indicate the presence of a pleural effusion.[17] while the presence of a mirror artifact above the diaphragm typically rules out effusion. The examiner may also identify lung floating in pleural fluid. The lung may become sonolucent and the bronchial tree may be visible because of compressive atelectasis caused by the pleural effusion. The exam is then repeated on the contralateral side.
    i. This exam can be performed as part of the extended FAST (E-FAST) exam in trauma patients to identify hemothorax.
2. Evaluation in the upright patient can be performed by placing the transducer on the midscapular line in a sagittal orientation and sliding it from the level of the liver (on the right) or the spleen (on the left) in a cephalad direction until the diaphragm and costophrenic sulci are identified. In the normal patient, this will be recognized by the presence of pleural sliding. Abnormal fluid collections (effusion, hemothorax, empyema, etc.) appear anechoic or hypoechoic or complex. This approach is typically utilized to facilitate thoracentesis.

iii. Interstitial lung fluid

1. There is a substantial body of literature supporting the use of ultrasound for the differentiation of intrinsic lung disease and pulmonary edema states as a cause of acute dyspnea. The ultrasound finding of relevance is the presence of widespread B-lines. These are fine reverberation artifacts that extend from the pleural line to the far field. (Traditionally, depth is set at 15 cm.) These represent accumulation of fluid within the pulmonary interstitium. Many qualitative and quantitative methods have been described to assess B-lines. One of the most widely used divides the anterolateral thorax into eight zones.[18,19]
2. Evaluation. Using the phase array, curvilinear probes, or microconvex probe four zones in each hemithorax are defined approximately by the anterior axillary line (anterior and posterior) and the nipple line (superior and inferior) and should be interrogated for a complete exam. If possible, artifact-reduction technologies such as multibeam processing and tissue harmonic imaging should be turned off. The transducer should be oriented in the sagittal plane to identify two ribs and the pleural line immediately beneath the ribs. Scattered comet tail artifacts that dissipate in the far field are caused by minor irregularities in the visceral pleura are referred to as "Z-lines," and have no clinical significance other than their presence rules out pneumothorax at that scan location. Z-lines can be distinguished from B-lines by their lack of persistence past 3-5 centimeters where B-lines extend beyond 10 cm depth.
3. Interpretation. Scattered B-lines may be normal in the more posterior areas of lung in the supine patient but are abnormal if found anteriorly. When B Lines are found in multiple

spaces, bilaterally, and anteriorly this is more specific for interstitial lung fluid/edema. These findings typically correlate with cardiogenic pulmonary edema, ARDS, but can also be seen in viral pneumonia.[20] If the B-lines are unilateral or more localized, a focal process such as pneumonitis, pneumonia or pulmonary contusion, in the setting of trauma, is more likely.[20, 21] Bilateral and extensive B-lines are more likely to be due to a more generalized process such as volume overload, heart failure, or ARDS.[20] In extreme cases, the B-lines can become confluent, giving the appearance of a swinging curtain of artifact.

iv. Pneumonia
   1. Viral and bacterial pneumonia. Lung ultrasound is a useful tool aiding in the diagnosis and monitoring of pneumonia.[22]
   2. Evaluation. To perform this evaluation, the thorax is divided into regions as described above (see Interstitial Lung Fluid section above). A curvilinear or phased array probe is used to evaluate the lung parenchyma for sonographic signatures such as pleural line abnormalities, B-lines, dynamic air bronchograms, and pulmonary consolidation.
   3. Interpretation. In the appropriate clinical setting, focal B-lines may be indicative of an early pneumonia. Diffuse B-lines can be identified in atypical and viral pneumonias. Dynamic air bronchograms represent bronchi filled with air and fluid. In the setting of lobar pneumonia, consolidated lung parenchyma may be visible; this is sometimes referred to as "hepatization" of the lung tissue due to the fact that the lung parenchyma develops a sonographic appearance similar to that of the liver. The shred sign can also be visualized at or below the level of the pleura, representing consolidation of the lung parenchyma.[4]

5. Documentation

In performing CUS of the lung and pleural spaces, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the structures and fields interrogated, and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A linear array transducer with a frequency range of 5.0 to 12.0 MHz will allow the sonologist to image the superficial pleura and its artifacts. A curvilinear or phased array probe with a low frequency range of 2.0 – 5.0 MHz can be used for the evaluation of pleural effusion and B-lines. Both hand-held and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education

Policies and procedures related to quality, safety, infection control, and patient concerns should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Dahmarde H, Parooie F, Salarzaei M. Accuracy of ultrasound in diagnosis of pneumothorax: a comparison between neonates and adults—a systematic review and meta-analysis. *Can Respir J*. 2019;5271982.

2. Alrajab S, Youssef AM, Akkus NI, Caldito G. Pleural ultrasonography versus chest radiography for the diagnosis of pneumothorax: review of the literature and meta-analysis. *Critical Care.* 2013;17(5):1-8.
3. Reissig A, Gramegna A, Aliberti S. The role of lung ultrasound in the diagnosis and follow-up of community-acquired pneumonia. *Eur J Intern Med.* 2012;23(5):391-7.
4. Lichtenstein DA. BLUE-protocol and FALLS-protocol: two applications of lung ultrasound in the critically ill. *Chest.* 2015;147(6):1659-70.
5. Mongodi S, Orlando A, Arisi E, Tavazzi G, Santangelo E, Caneva L, et al. Lung ultrasound in patients with acute respiratory failure reduces conventional imaging and health care provider exposure to COVID-19. *Ultrasound Med Biol*. 2020, 46(8), 2090-3.
6. Ticinesi A, Lauretani F, Nouvenne A, Mori G, Chiussi G, Maggio M, et al. Lung ultrasound and chest x-ray for detecting pneumonia in an acute geriatric ward. *Medicine (Baltimore).* 2016;95(27):e4153.
7. Balk DS, Lee C, Schafer J, Welwarth J, Hardin J, Novack V, et al. Lung ultrasound compared to chest X-ray for diagnosis of pediatric pneumonia: a meta-analysis. *Pediatr Pulmonol.* 2018;53(8):1130-9.
8. Hew M, Tay TR. The efficacy of bedside chest ultrasound; from accuracy to outcomes. Eur Respir Rev. 2016;25(141):230-46.
9. Hendin A, Koenig S, Millington SJ. Better with ultrasound: thoracic ultrasound. *Chest*. 2020;158(5):2082-9.
10. Winkler MH, Touw HR, van de Ven PM, Twisk J, Tuinman PR. Diagnostic accuracy of chest radiograph, and when concomitantly studied lung ultrasound, in critically ill patients with respiratory symptoms: a systematic review and meta-analysis. *Crit Care Med. 2018;46*(7):e707-14.
11. Tierney DM, Huelster JS, Overgaard JD, Plunkett MB, Boland LL, et al. Comparative performance of pulmonary ultrasound, chest radiograph, and CT among patients with acute respiratory failure. *Crit Care Med.* 2020;48(2):151-7.
12. Dietrich CF, Mathis G, Blaivas M, Volpicelli G, Seibel A, Wastl D, et al. Lung B-line artefacts and their use. *J Thorac Dis*. 2016;8(6):1356-65.
13. Lichtenstein DA, Lascols N, Prin S, et al. The "lung pulse": an early ultrasound sign of complete atelectasis. *Intensive Care Med*. 2003;29(12):2187-92.
14. Farsi D, Zohri D, Abbasi S, Hessam R, Navkhasi S, Saifpanahi J. Comparison of the diagnostic values of four-point and two-point ultrasound versus CT scan in determining pneumothorax. *Pajouhan Sci J.* 2019;17(4):9-14.
15. Barillari A, Kiuru S. Detection of spontaneous pneumothorax with chest ultrasound in the emergency department. *Intern Emerg Med*. 2010;5:253-5.
16. Richards JR, Awrey JM, Medeiros SE, McGahan JP. Color and power Doppler sonography for pneumothorax detection. *J Ultrasound Med. 2017;36*(10):2143-7.
17. Dickman E, Terentiev V, Likourezos A, Derman A, Haines L. Extension of the thoracic spine sign: a new sonographic marker of pleural effusion. *J Ultrasound Med. 2015;34*(9):1555-61.
18. Soldati G, Demi M. The use of lung ultrasound images for the differential diagnosis of pulmonary and cardiac interstitial pathology. *J Ultrasound. 2017;20*(2):91-6.
19. Volpicelli G, Elbarbary M, Blaivas M, Lichtenstein DA et al (2012) International evidence-based recommendations for point-of-care lung ultrasound. *Int Care Med.* 2012;38(4):577–91.
20. Mongodi S, De Luca D, Colombo A, Stella A, Santangelo E, Corradi, F, et al. Quantitative Lung Ultrasound: Technical Aspects and Clinical Applications. *Anesthesiology.* 2021;134(6):949-65.
21. Abbasi S, Shaker H, Zareiee F, Farsi D, Hafezimoghadam P, Rezai M, et al. Screening performance of ultrasonographic B-lines in detection of lung contusion following blunt trauma; a diagnostic accuracy study. *Emerg (Tehran).* 2018;6(1):e55.
22. Mongodi S, Via G, Girard M, Rouquette I, Misset B, Braschi A, et al. Lung ultrasound for early diagnosis of ventilator-associated pneumonia. *Chest.* 2016;149(4):969-80.

Ocular

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of the eye to evaluate for traumatic and non-traumatic findings.

The use of CUS of the eye has been used for the detection of posterior chamber and orbital pathology. Specifically, ultrasound has been described to detect retinal detachment, vitreous hemorrhage, and dislocations or disruptions of structures. In addition, the structures posterior to the globe such as the optic nerve sheath diameter may be a reflection of other disease in the central nervous system.

CUS evaluation of the eye occurs in conjunction with other CUS applications and other imaging and laboratory tests. It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. While other tests may provide information that is more detailed than CUS, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Further, CUS avoids the delays, costs, specialized technical personnel, the administration of contrast agents and the biohazardous potential of radiation. These advantages make CUS a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as ocular complaints.

2. Indications/Limitations

a. Primary
   i. Assessment for retinal detachment (RD)
   ii. Assessment for vitreous detachment/hemorrhage
   iii. Assessment for intracranial hypertension (ICH) indirectly via optic nerve sheath diameter measurement and/or visualization of optic disc edema

b. Extended
   i. Lens dislocation
   ii. Intraocular foreign body
   iii. Globe rupture
   iv. Retrobulbar hemorrhage
   v. Central retinal artery/vein occlusion
   vi. Subretinal hemorrhage
   vii. Posterior vitreous detachment (PVD)
   viii. Direct and consensual light reflex

c. Limitations
   i. Patient's inability to tolerate exam secondary to eye pain
   ii. Known globe rupture

d. Relative Contraindications
   i. Concern for globe rupture. This risk may be minimized with the use of a transparent film dressing (eg, Tegaderm) and copious gel over the closed eyelid to ensure no pressure is applied.
   ii. Periorbital wounds

e. Pitfalls
   i. Missed pathology due to visualization in only one plane or neglecting to utilize kinetic echography to visualize all quadrants and contents of the globe.
   ii. Applying too much pressure in a patient with suspected globe rupture or intraocular foreign body. In these patients a Tegaderm may be placed over the closed eyelid and copious gel applied. Scanning may then proceed using minimal or no applied pressure.

iii. Failure to differentiate retinal detachment from other pathologies such as chronic vitreous hemorrhage, PVD, or fibrinous vitreous bands.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Ocular CUS is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by ocular CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of ocular pathology, emergency interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform ocular ultrasound. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of ocular disease, as outlined above.

4. Specifications for Individual Examinations

a. General: The eye is examined systematically in real time in all quadrants and in at least two orthogonal directions. The ultrasound images are interpreted in real-time as the exam is being performed. Images may be captured for archiving and/or quality review.

b. Technique

i. Anterior chamber. The anterior chamber of the eye is the smaller of the two chambers. It appears in the near field and is bounded posteriorly by the iris and lens.

ii. Iris. In a transverse section, the iris is usually seen as 2 horizontal hyperechoic lines flanking the lens. In a longitudinal plane, the iris is donut-shaped, hyperechoic, and changes size when a light source is externally applied.

iii. Lens. Due to its density and composition, the lens is difficult to completely visualize. Usually only the anterior and posterior surfaces, represented by two gently curved inverse arcs between the horizontal lines of the iris, can be seen. Reverberation artifact may also be seen extending posteriorly from the lens.

iv. Posterior chamber. The posterior chamber of the eye is the larger of the two chambers. It is located directly posterior to the iris and lens and should be completely anechoic and without internal echoes in the absence of pathology.

c. Real-time scanning technique

i. Overview. The ocular examination can be performed at the patient's bedside and requires little patient preparation except for positioning in the bed (supine or semi-recumbent), and a 5-14 MHz linear probe. For patient comfort, a Tegaderm may first be placed over the closed lid and then a generous amount of sterile ultrasound gel applied. The benefit of a Tegaderm is that only a small to no amount of gel needs to be applied to the orbit prior to scanning. A con is that it may adhere to eyelashes and skin. When not using Tegaderm, copious gel should be applied to fill the optic cup. The ophthalmic preset, if available, should be used with the power at 50%. Depth should be adjusted so the entire globe is visualized as well as several centimeters of the retrobulbar space and optic nerve.[1] The examiner should rest the examining hand on the patient's forehead, nose, or zygomatic arch to avoid unnecessary pressure on the globe. Typically, the examination is begun on the affected side and scanning is performed in two planes while the patient is asked to move their eyes in all 4 directions (kinetic echography). This serves two purposes: 1) all quadrants may be assessed and 2) certain pathologies, such as retinal detachment and vitreous hemorrhage, are more easily identified since they move with eye movement. Gain should be adjusted to low/mid-range initially, and further examination should increase gain to higher ranges to detect PVD.

ii. Key components of the exam. Both eyes are systematically scanned in all quadrants as described above.
    1. Traumatized eye. Evaluation of the traumatized eye with ultrasound is especially helpful when swelling limits direct visualization and evaluation of the eye and surrounding structures. The contours of the posterior chamber should be perfectly circular, and particular attention is paid to the posterior surface of the posterior chamber for evidence of retinal detachment. The vitreous is examined for hemorrhage/detachment or foreign bodies. Attention should also be paid to the retrobulbar space for hemorrhage and the optic nerve for edema. Direct and consensual light reflex of the iris may be checked with an external light source applied to the closed eyelid of the traumatized eye as well as the unaffected eye.
    2. Non-traumatized eye. Evaluation of the non-traumatized eye is a useful adjunct to the physical exam and slit lamp exam, especially with complaints of sudden onset vision loss. Attention is again paid to the posterior chamber for evidence of vitreous detachment with or without accompanying retinal detachment or hemorrhage. If the examiner is sufficiently skilled, color and power Doppler can be used to examine blood flow if central retinal artery/vein occlusion is suspected.

iii. Pathologic findings
    1. Fibrinous vitreous bands. Usually, an asymptomatic bilateral finding that occurs increasingly with age, these bands are also associated with diabetic retinopathy, sickle cell disease, prematurity, or previous vitreous hemorrhage. Bands appear as multiple hyperechoic mobile fibers in the posterior chamber that move with eye movement. Gain setting must usually be significantly increased to see fibrinous bands.
    2. Retinal detachment. A brightly echogenic line separated from the posterior globe and tethered to the optic nerve is indicative of RD. This should move as the eye is taken through range of motion. Depending on the cause of the detachment, other findings such as posterior vitreous detachment, vitreous hemorrhage, or subretinal hemorrhage may also be present. RD should be easily seen at normal gain levels.
    3. Vitreous hemorrhage. The sonographic appearance of vitreous hemorrhage depends on the quantity and age of the hemorrhage. A small amount of fresh hemorrhage will appear as hyperechoic flecks that move with eye movement. A greater amount of blood will tend to layer along the posterior surface of the eye and also moves with eye movement. As blood ages, it tends to coalesce as string-like bands in the posterior chamber that move with eye movement but are not tethered to the optic nerve.
    4. Posterior vitreous detachment. PVD occurs increasingly with age and is usually an asymptomatic process but sometimes presents with photopsia. PVD is usually seen at higher gain levels and appears as a single, delicate string-like membrane that is detached from the posterior globe and moves with eye movement. It is generally thinner and less echogenic than an RD and notably, should *not* be tethered to the optic nerve. PVD can become more symptomatic when it causes a tear in the retina resulting in hemorrhage and a retinal detachment.
    5. Subretinal hemorrhage. This appears as a shifting fluid collection along the posterior globe that is slightly more echoic than the vitreous body and is separated from it by the brightly echogenic retina.
    6. Lens dislocation. Bedside ultrasound suggests a lens dislocation when the position of the lens in the affected eye to the relative position in the unaffected eye is disrupted and out of place.
    7. Foreign body. Bedside ultrasound suggests an orbital foreign body when hyperechoic foreign material is seen in the globe when scanning in two planes. Thin-slice CT has a slightly higher sensitivity for intraocular foreign bodies, mainly because intraocular air introduced with the foreign body can hinder the view of deeper structures and pathology.

All foreign bodies will appear hyperechoic with varying posterior artifact based on the composition of the foreign body itself (Metal and glass tend to produce reverberation artifact. Wood, gravel, and plastic are hyperechoic with a trailing shadow).

8. Globe rupture. Ultrasound suggests globe rupture when the depth of the affected globe is shallow relative to the unaffected side. The globe typically loses the perfectly circular contour and vitreous hemorrhage is commonly seen in the posterior chamber. The scan is performed using a thick layer of sterile gel to avoid pressure as well as any direct contact between probe and eyelid.
9. Retrobulbar hemorrhage. Usually appears as a hypoechoic fluid collection posterior to the globe.
10. Optic nerve edema. The intra-orbital subarachnoid space is distensible and subject to the same pressure shifts as the intracranial compartment which contains the optic nerve. In an axis perpendicular to the optic nerve 3mm behind the globe, the optic nerve sheath diameter is measured. The optic nerve should be aligned directly opposite the probe but the optic nerve sheath diameter width measured perpendicular to the vertical axis of the scanning plane. At least two measurements should be performed; a mean optic nerve sheath diameter of ≤5mm has been suggested as the upper limits of normal in an adult with concern for increased ICP. This cut-off shows high negative predictive value and excellent specificity compared to ophthalmologists' examination for papilledema.[2] Accepted pediatric cut-offs are 4.5mm for children ages 1-17 years old and 4mm for infants <1 year old.[3]
11. Optic disc edema. When traditional fundoscopy provides a less than ideal exam in the emergency setting, POCUS can be used to identify optic disc elevation suggestive of disc edema (sonographic papilledema). In the horizontal axis, with the patient instructed to maintain a fixed forward gaze, the posterior orbit is assessed along the retinal surface at the junction of the retrobulbar optic nerve and the globe. Presence of a smooth, echogenic prominence of the disc (cupping or crescent sign) is abnormal.[4,5] Optic disc height is measured between the anterior-most peak of the disc and its intersection with the arc of the posterior surface of the globe. A disc height of >.6mm is a sign of edema, with measurements >1mm highly specific for papilledema.[5]
12. Central retinal artery occlusion (CRAO). Ocular ultrasound suggests occlusion to the central retinal artery or vein when there is loss of color flow along the posterior globe or overlying the optic nerve (the retinal artery and vein run within the optic nerve sheath). Power Doppler should be used if color flow is not evident, and both arterial and venous waveforms should be documented in pulse Doppler mode. This is an advanced application of ocular ultrasound and is best used with other clinical information to support the diagnosis, but not rule it out.
13. Light response. The pupil may be assessed for direct and consensual light response through a closed or edematous eyelid. The iris is usually visualized in a long axis by moving the transducer to the top of the orbit in a transverse plane and fanning inferiorly while asking the patient to look at their feet. Light is then applied to either closed eyelid and the iris assessed for constriction. Measurements of pupil constriction can also be formally obtained with this method.

5. Documentation

In performing CUS of the eye, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Documentation of the ocular CUS should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and in

accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A high frequency linear array probe with a frequency range of 5 to 14 MHz is ideal, as this range will allow the sonographer to image the globe in detail.[6] An endocavitary transducer with similar frequency range can also be used and allows a sector field of view for better imaging of the retrobulbar space. B-mode imaging is preferred to avoid exposure of the eye to higher power outputs. Color-flow and Doppler modes may be used for focused evaluations of the optic nerve and retina, but these examinations should be minimized.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education

Policies and procedures related to quality, safety, infection control, and patient concerns should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Gandhi K, Shyy W, Knight S, Teismann N. Point-of-care ultrasound for the evaluation of non-traumatic visual disturbances in the emergency department: The VIGMO protocol. *Am J Emerg Med*. 2019;37(8):1547-53.
2. Wilson CL, Leaman SM, O'Brien C, Savage D, Hart L, Jehle D. Novice emergency physician ultrasonography of optic nerve sheath diameter compared to ophthalmologist fundoscopic evaluation for papilledema. *J Am Coll Emerg Physicians Open*. 2021;2(1):e12355.
3. Lin JJ, Chen AE, Lin EE, Hsia SH, Chiang MC, Lin KL. Point-of-care ultrasound of optic nerve sheath diameter to detect intracranial pressure in neurocritically ill children - A narrative review. *Biomed J*. 2020;43(3):231-9.
4. Mohson KI, Auday N. Role of orbital ultrasound in the assessment of clinically detected papilledema. *J Med Ultrasound*. 2019;27(3):135-40.
5. Teismann N, Lenaghan P, Nolan R, Stein J, Green A. Point-of-care ocular ultrasound to detect optic disc swelling. *Acad Emerg Med*. 2013;20(9):920-5.
6. Adhikari S. High-frequency transducers for point-of-care ultrasound applications: what is the optimal frequency range? *Intern Emerg Med*. 2014;9(4):463-6.

Pediatric Appendicitis

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the appendix in patients who present with right lower quadrant (RLQ). The evaluation of other RLQ structures, especially gynecologic entities, is considered in the criteria for Pelvic imaging compendium section.

RLQ pain is a common emergency department (ED) complaint and can often be time consuming and carry a heavy burden to the ED. Assessment for acute appendicitis is a primary indication for CUS in pediatric patients, however is considered an extended indication for adults, particularly because of significant differences in habitus between these two patient populations, higher probability of an alternative diagnosis in adult patients, and a different threshold to expose a patient to ionizing radiation. However, the distinction between primarily indicated or extended may vary based on patient characteristics and the provider's comfort in performing and interpreting imaging findings when caring for a patient of any age.

Pediatric CUS assessment for acute appendicitis is a rapid and accurate diagnostic modality that is non-invasive and can occur in conjunction with other imaging and laboratory testing. It is a clinically focused examination, which in addition to the initial clinical pre-test probability for appendicitis, will enhance practitioner's overall diagnostic accuracy. Alternative imaging such as computed tomography (CT) or magnetic resonance imaging (MRI) may offer additional data that may be more detailed than CUS, have greater specificity, or identify an alternative diagnosis. However, CT conveys the risk of exposure to ionizing radiation and MRI has a long study time that often requires sedation in the younger patient population. Therefore, CUS is considered an appropriate first-evaluation tool that can narrow a differential diagnosis for the practitioner and answer a specific clinical question in a timely and reliable manner.

2. Indications/Limitations

a. Primary
   Detection of acute appendicitis
b. Extended
   i. Gross examination of the RLQ, for evidence of inflammation and free fluid.
   ii. Intestinal inflammation
   iii. Evaluation for abscess
c. Contraindications
   i. There are no absolute contraindications for performing CUS for the evaluation of appendicitis
   ii. Clinical instability is a relative contraindication for performing CUS.
d. Limitations
   i. Given the focused nature of the limited evaluation, CUS cannot identify all abnormalities in the right lower quadrant. If the findings of the CUS are equivocal, and/or the clinical picture is concerning, then further imaging may be necessary.
   ii. CUS may be technically limited by:
      1. A patient's body habitus (obesity, severe scoliosis, or other chronic conditions)
      2. Bowel gas
      3. Significant stool burden
      4. Younger pediatric patients may not be as cooperative, therefore limiting results
      5. Patient tolerance of exam due to abdominal guarding and pain
      6. Lack of visualization of the full length of the appendix as it extends off the cecum
      7. Lack of visualization of the normal appendix
e. Pitfalls
   i. During the CUS, if the practitioner encounters bowel gas, stool or the inability to obtain adequate images due to technical factors, these limitations should be documented, and further imaging based on clinical suspicion may be warranted.
   ii. The small intestine may mimic the appendix, especially when there is an ileus. The lack of peristalsis makes it difficult to distinguish from a non-persistalsing appendix.
   iii. Absence of full evaluation of the length of the appendix does not eliminate the possibility of tip-appendicitis.
   iv. In some patients, a normal appendix may measure > 6mm in diameter. Lack of point tenderness, wall thickening, or inflammatory changes can help differentiate these from acute appendicitis.
   v. Air within the appendix may be confused with an appendicolith which is hyperechoic and exhibits posterior shadowing.
   vi. The appendix is frequently found in the right lower quadrant. However, due to a wide range of anatomical variance, the appendix may be located in the right upper quadrant, mid-abdomen, or pelvis. The inability to find the appendix does not eliminate the possibility of appendicitis. The different stages of appendicitis can vary depending on the degree of inflammation. In more progressive disease, normal layers of an inflamed appendix may be

lost, and local inflammation or fluid may be the only identifying abnormality visualized to suggest appendicitis.

vii. In chronic appendicitis, peritoneal abscess formation may be appreciated on CUS. and this may appear similar to RLQ free fluid collections. Abscess collections may appear in various shapes and sizes, with notable septations and surrounding inflammatory changes. However free fluid tends to remain located in the inferior aspect of the RLQ as well as in the deep pelvic recesses. Clinical history, a high index of suspicion, as well further laboratory testing may aid in differentiating between the two entities.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the appendix provides immediate information upon which a decision for further evaluation, management and interventions are based. Therefore, performing and interpreting CUS is the responsibility of clinicians trained in CUS of the appendix.

Physicians of a variety of medical specialties may perform an appendix ultrasound examination. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute appendix pathology as outlined above. Because this is an important part of clinical care, the results of the CUS should be documented and reported in the medical record.

4. Specifications for Individual Examinations

a. General - The practitioner should attempt CUS while the patient is in the supine position. Ultrasound images should focus on the RLQ, and the practitioner should make every effort to identify anchoring anatomy such as the abdominal wall, bowel, psoas muscle, vascular structures, and bone to aid in identifying the appendix. The family/guardians and the patient should be made aware of the benefits and limitations of CUS, including that it is limited in scope, does not use ionizing radiation, and is repeatable if necessary.

b. Technique

i. Identification of RLQ structures.

1. Abdominal wall - These structures provide the anterior borders to the RLQ. In the RLQ, with a transverse/axial plane orientation, probe indicator toward the patient's left, the near field structures include the abdominal wall soft tissue, followed by the rectus muscle medially, and internal and external oblique muscles fascia laterally. The peritoneal lining forms the posterior border to the abdominal wall. It is a hyperechoic line just below the muscle bundle separating the wall from the contents in the peritoneum.
2. Ascending colon / cecum - The ascending colon is best seen in the longitudinal/sagittal plane on the patient's right lateral anterior abdomen just above the iliac crest. The colon is a non-peristaltic tubular structure that has thick mucosal lining, haustra delineating its segments, and may be filled with stool or fluid. Stool may appear "speckled" in appearance with scattered small hyperechoic non-shadowing air and fluid contents within the colonic lumen.
3. Small intestine – The small intestine tends to be found more medially than its colonic counterparts. It is frequently peristalsing and may be liquid filled with some associated air-fluid artifacts. The small intestine tends to have thinner mucosal lining, except in the scenario of gastroenteritis. They may also appear flattened or irregularly shaped, and compressible when utilizing graded compression during the examination.
4. Posterior/retroperitoneal structures in the RLQ – In the far field, the psoas muscle and the iliac vessels offer the deep border to the peritoneum. Just posterior to these structures include the pelvic bone appearing as a hyperechoic curved line with shadowing.
5. The appendix – The appendix is a tubular structure, typically with an outside wall to outside wall diameter of less than 6 mm, in the anterior/posterior orientation. A non-

inflamed appendix tends to be a compressible, non-peristaltic oval structure that is proximally attached to the cecum and terminating distally in a blind ended pouch. Several mucosal layers may also be seen on the transverse image to give the appearance of a "target" sign. The characteristics described above are meant to differentiate between the appendix and the small intestine.

ii. Real-time scanning technique
Overview. The CUS of the appendix is best visualized using a high frequency linear (12-8MHz) with the patient in the supine position. A low frequency curvilinear probe (5-2MHz) may be required in patients who have a larger body habitus. The RLQ should be interrogated in the longitudinal and transverse planes, taking care to identify the ascending colon, cecum, psoas, iliac vessels, and the appendix.

iii. Key components of the examination
1. Graded compression technique - Initially, when the probe is placed on the skin in the location of evaluation, gentle compression is performed. This technique allows for visualization of deeper structures by displacing intraluminal gas and stool, while also bringing possible pathology closer to the probe. Adequate compression is achieved when the psoas muscle and iliac vessels are in view and just underneath the rectus muscles. Analgesics or distractors may be required to improve cooperation with this part of the exam.
2. Point of maximal tenderness – If the pain is well localized, initially, the practitioner may focus the examination on the area of focal tenderness. Due to the variability of the anatomic position of the appendix, insonation in the transverse and longitudinal planes should be dictated by location of pain.
3. Finding the cecum - The ascending colon is identified as the most lateral bowel structure in the right abdomen, with the scan starting at the level of the umbilicus. Once located, the practitioner traces the ascending colon distally caudally towards the cecum and into the pelvis. At any point along this anatomic scan the sonographer may find the appendix in long or short axis, though it most commonly arises off the medial cecal wall.

iv. Appendicitis - sonographic criteria for acute appendicitis
1. Size - > 6 mm diameter is a conservative measurement for diagnosing appendicitis.
2. Non-compressibility - The inflamed appendix is a non-compressible structure, whereas the normal appendix may exhibit some compressibility.
3. No peristalsis – Absent peristalsis will help distinguish between the appendix and a peristaltic small intestine. However, in the setting of intestinal ileus, it may be difficult to distinguish between the appendix and small intestine, and other sonographic criteria will need to be documented to support a diagnosis of appendicitis.
4. Sonographic McBurney's Point - Pain with compression over McBurney's point may be an indicator for disease.
5. Appendicolith - This can be appreciated as a hyperechoic spherical structure within the appendix that is immobile with patient repositioning and usually causes posterior shadowing. Air in the appendix can also appear hyperechoic, but typically causes "dirty" shadowing and is less likely associated with other signs of acute appendicitis.
6. Peri-appendiceal inflammation – In some individuals, inflammation can be extensive and may be the initial sonographic finding alerting the sonographer to an inflamed appendix. Small anechoic fluid collections may be seen initially in the peri-appendiceal region, and later, large abscess collections may be appreciated. Additionally, the surrounding peritoneal fat may appear hyperechoic relative to non-inflamed areas - typical of "stranding" seen on CT.
7. Free fluid – Fluid in the RLQ area will appear anechoic taking on an irregular shape as it layers between bowel loops and will not have a clearly defined mucosal border. This may be from peri-appendiceal inflammation or secondary to ruptured acute appendicitis.

5. Documentation
In performing CUS of the appendix, images are contemporaneously obtained, interpreted, and used in clinical decision making. Documentation should be incorporated in the medical record, and should include the indication for the procedure, the views obtained, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and in accordance with facility policy requirements.

6. Equipment Specifications
A linear transducer with frequencies of 12-8MHz is appropriate. In certain instances, a curvilinear transducer 5-2MHz may be necessary. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education
Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Sivitz AB, Cohen SG, Tejani C. Evaluation of acute appendicitis by pediatric emergency physician sonographers. *Ann Emerg Med*. 2014;64(4):358-364.

Pediatric Hypertrophic Pyloric Stenosis

1. Introduction
The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) of the abdomen to evaluate pediatric patients suspected of having hypertrophic pyloric stenosis (HPS). The primary indication for this application is in an infant with non-bilious, nonbloody projectile vomiting. CUS of the abdomen for HPS occurs as a component of the overall clinical evaluation of a vomiting infant.

The examination is focused, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. Other diagnostic or therapeutic interventions may take precedence or may proceed simultaneously with the CUS evaluation. While other tests may provide information that is more detailed than CUS, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Further, CUS avoids delays, costs, specialized technical personnel, the administration of contrast agents and the biohazardous potential of radiation which is of greatest concern in pediatric patients. These advantages make CUS a valuable addition to available diagnostic resources in the care of patients with time-sensitive or emergency conditions such as HPS.

2. Indications/Limitations
a. Primary
Evaluation for hypertrophic pyloric stenosis
b. Extended
Identification of pylorospasm
c. Contraindications
There are no absolute contraindications to CUS for the evaluation of HPS. There may be relative contraindications based on specific features of the patient's clinical situation

d. Relative contraindications
   Unstable patient requiring resuscitation
e. Limitations
   i. Bowel gas in the stomach and from overlying transverse colon.
   ii. Overdistended stomach
   iii. Crying infant unable to tolerate the exam
f. Pitfalls
   i. Pylorospasm may mimic HPS findings. When encountering borderline measurements, the area should be observed for up to 5-10 minutes allowing time for spontaneous pyloric wall relaxation and passage of gastric contents.
   ii. Misidentification of the gastric or duodenal wall may result in a false negative examination.
   iii. Misidentification of the esophagus as the pylorus. This is avoided by recognizing the proximity of the esophagus to the aorta immediately posterior. The esophagus also lacks the noted transition between the relatively thick pylorus and much thinner duodenal wall.
   iv. Off-axis measurements may overestimate the true pyloric muscle wall diameter.
   v. Air in the stomach: To counter poor visualization due to air in the stomach, rotate the infant into a right lateral decubitus position. This moves air into the gastric fundus and relies on gravity to preferentially fill the pyloric antrum with gastric fluid for an improved sonographic window.
   vi. Overdistended stomach: To counter the mass-effect of an overfilled stomach and subsequently posteriorly positioned pylorus, rotate the infant into a left lateral decubitus position. This redirects fluid into the gastric fundus and allows the pylorus to rotate into a more anterior position.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the abdomen for HPS provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis of HPS by CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of HPS, emergent interventions may be mandated by the diagnostic findings of CUS examination. For this reason, CUS should be performed as soon as the clinical decision is made that the patient needs a sonographic evaluation.

Physicians of a variety of medical specialties may perform focused abdominal ultrasound for HPS. Training should be in accordance with specialty or organization-specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of HPS, as outlined above.

4. Specifications for Individual Examinations

General: While in a transverse plane and using gentle graded compression with pre-warmed gel, the stomach wall is traced towards the pylorus.

i. Identification
   1. Stomach. The stomach is recognized by the distinctive anatomy of its smooth serosal surface which can be distinguished from the transverse colon's regular haustral markings and the small bowel's smaller diameter and active peristalsis. The mucosal surface of the stomach may exhibit finger-like rugae if in a relatively under-filled state or appear smooth if full and distended. Waves of peristalsis can be noted propagating towards the pylorus.
   2. Pylorus. The proximal pyloric channel is demarcated by the incisura angularis, which may appear as a notch on the serosal surface in an otherwise smoothly contoured stomach wall. Even without hypertrophy, the hypoechoic pyloric muscle wall appears thicker than the

contiguous gastric antrum wall. The pyloric channel ends at the interface between the pyloric sphincter muscle and the much thinner duodenal wall.

ii. Real-time scanning technique
Overview: A high frequency linear probe (13-8MHz) is recommended. The stomach lies in the upper left abdomen with the pylorus commonly found to the right of midline, between the subxiphoid position and right anterior costal margin. Starting subxiphoid and using the liver as an acoustic window, the anterior gastric wall is traced laterally and caudally to the right of midline along the lesser curvature of the stomach until it meets the pyloric antrum.

iii. Details of technique
Pylorus: The pyloric sphincter has a variable appearance depending on its relative state. When the pyloric muscle is closed with the channel collapsed, the channel may have an overall "sandwich" appearance with the anterior hypoechoic muscle wall layered on the compressed mucosa which overlies the posterior hypoechoic wall. In a relaxed state, gastric contents pass through or fill the channel, and the hypoechoic pyloric walls appear to end abruptly – though it is contiguous with the much thinner duodenal wall. Finally, the pyloric sphincter can be closed with fluid in the channel, making it difficult to see where the channel ends. Here it helps to recognize where the hyperechoic mucosal surface "crosses" the sphincter and continues along the small bowel. The pylorus is a dynamic structure and during peristalsis may appear open and then closed, with relative changes in the measured muscle wall diameter and length.

1. Diagnostic measurements:
    a. The hypoechoic pyloric muscle wall diameter is measured in a perpendicular axis to the orientation of the wall, which may not be entirely linear. A pyloric muscle diameter of less than 3 mm is considered normal, with measurements between 2 and 2.9 mm seen in both normal and pylorospasm.
    b. The channel length is considered abnormal if it is greater than 15 mm measured from the incisura to the end of the channel. If the channel is curved, a straight length measurement is approximated.
    c. Fluid moving through a dilated open channel, or one with visualized peristalsis precludes a diagnosis of HPS.

iv. Pathologic findings
1. Pyloric muscle wall diameter greater than 3 mm is considered abnormal.
2. Pyloric channel length greater than 15 mm is considered abnormal.
3. If there is variability in the wall diameter with measurements less than 3mm or a diameter slightly greater but length less than 15mm, consider pylorospasm. In this case, observe for up to 5-10 minutes to watch for muscle relaxation.
4. In HPS, the compressed pyloric mucosa often protrudes back into the gastric antrum producing the "antral nipple" sign.
5. The enlarged pyloric muscle similarly projects back into the antrum producing the "shoulder" sign.
6. In a short axis view the thickened pylorus wall will exhibit a "donut" or "target" sign.

5. Documentation

In performing CUS of the abdomen for HPS, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified, limitations of the exam, and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications
A linear array transducer with a frequency of 13-8MHz is optimal to image HPS in most patients. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control Improvements, Safety, Infection Control and Patient Education
Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

Related Resources

1. Sivitz AB, Tejani C, Cohen SG. Evaluation of hypertrophic pyloric stenosis by pediatric emergency physician sonography. *Acad Emerg Med.* 2013;20(7):646-51.
2. Malcom GE 3rd, Raio CC, Del Rios M, Blaivas M, Tsung JW. Feasibility of emergency physician diagnosis of hypertrophic pyloric stenosis using point-of-care ultrasound: a multi-center case series. *J Emerg Med*. 2009;37(3):283-6.

Pediatric Intussusception

1. Introduction
The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) of the abdomen to evaluate pediatric patients suspected of having intussusception.

Intussusception is classically a disease of young children typically aged 3 months to 6 years. However, it can occur in older patients, often in the context of underlying bowel pathology. The lesion of intussusception consists of the intussusceptum, usually the terminal ileum, which invaginates into the intussuscipiens, usually the cecum. This produces the classic target lesion of intussusception. Once this occurs, the bowel becomes progressively edematous and ultimately ischemic. The high sensitivity and rapid availability of CUS for intussusception makes this imaging modality ideal because it can be used to expeditiously diagnose this time-sensitive disease.[1] CUS of the abdomen for intussusception is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making.

2. Indications/Limitations
a. Primary
Identification of intussusception
b. Extended
   i. Identification of free fluid
   ii. Identification of decreased color flow within the intussusception, raising concern for bowel ischemia
   iii. Identification and differentiation from small bowel intussusception
c. Contraindications
There are no absolute contraindications to CUS for intussusception. There may be relative contraindications based on specific features of the patient's clinical situation.
d. Relative contraindications
Unstable patient requiring intense resuscitation
e. Limitations
   i. Bowel gas

ii. Obese habitus (less common of an issue with this age group)
iii. Patient inability to cooperate with exam

f. Pitfalls
i. Mimics of intussusception include various normal structures in the abdomen including normal bowel, stool, the psoas muscle, the kidney, and intervertebral discs.
ii. Pathologic findings such as polypoid AVM of the colon, massively thickened appendix or perforated appendicitis, liver abscess, and eosinophilic gastroenteritis have been misidentified as intussusception.
iii. Ileocolic intussusception must be distinguished from small bowel intussusception as the management is different. While patients with ileocolic intussusception are treated with barium/air enema and/or surgery, small bowel intussusception is most often managed conservatively with repeat US to ensure spontaneous resolution.
iv. Failure to obtain adequate images can occur due to overlying bowel gas, a common problem in young children who are crying.
v. Intussusception can self-reduce and re-intussuscept, so having a low threshold to repeat imaging if the initial scan is negative, particularly if the patient is intermittently symptomatic, is paramount to a timely diagnosis.

3. Qualifications and Responsibilities

The clinician performing CUS of the abdomen for intussusception provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis of intussusception by CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of intussusception, emergent interventions may be mandated by the diagnostic findings of CUS examination. For this reason, CUS should be performed as soon as the clinical decision is made that the patient needs a sonographic evaluation.

Physicians of a variety of medical specialties may perform focused abdominal ultrasound for intussusception. Training should be in accordance with specialty or organization-specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of intussusception. Because this is an important part of clinical care, the results of the CUS should be documented and reported in the medical record as soon as it is clinically appropriate to do so.

4. Specifications for Individual Examinations

a. General: Using graded compression, the entire abdomen is systematically examined in all four quadrants and bilateral flanks. The ultrasound images are interpreted in real-time as the exam is being performed. Images should be saved for archiving and/or quality review. The family/guardians and the patient should be made aware of the benefits and limitations of CUS, including that it is limited in scope, does not use ionizing radiation, and is repeatable if necessary.
b. Technique
i. Real-time scanning technique
1. Overview: A high frequency 13-5MHz linear probe is optimal in most cases. Starting on the right abdomen, all four quadrants of the abdomen are systematically scanned as well as both flanks. A true ileocolic intussusception will most often be found in the right upper or right lower quadrant. Ideally, images of each quadrant in both the transverse and sagittal planes are obtained and archived. Additionally, one sagittal image from both flanks may be documented. This ensures total visualization of the abdomen.
2. Details of technique:
a. Picture frame technique: One approach is to start in the right lower quadrant (RLQ) and systematically scan across to the left lower quadrant (LLQ). Place the probe in

the transverse plane in the RLQ, then scan cephalad tracing the ascending colon up to the right upper quadrant (RUQ). Once the liver edge is visualized, rotate the probe 90 degrees clockwise until the probe is in the sagittal plane (probe indicator toward the head). Then scan from the RUQ to the LUQ, tracing the transverse colon. Finally, in the LUQ, rotate the probe counterclockwise back to the transverse plane (probe indicator to the patient's right), and scan from the LUQ to the LLQ, tracing the descending colon.

b. Lawnmower technique: Another approach is to start in the RUQ and travel down the ascending colon to the RLQ. The probe is then moved slightly towards the patient's left side, and the probe should scan up and down the abdomen, moving towards the patient's left until all quadrants of the abdomen have been interrogated.
c. If an intussusception has been identified, color flow may be utilized on the target lesion to determine if there is any bowel ischemia present.
d. Nonvisualization of an intussusception due to overlying bowel gas may occur. This is further complicated by the fact that children often cry during the exam leading to even more gas in the bowel. Thus, one should always use graded compression during the CUS to better visualize structures and to maximize the chance of identifying an intussusception. It may also be helpful to use adjuncts such as pacifiers, glucose solutions, parent or child life involvement, or warm gel to help calm the child.
e. If the study is non-diagnostic additional testing should be considered. If the CUS is negative with a high pre-test probability, then observation and repeat scanning, or additional testing for occult intussusception or alternative diagnosis should be considered.

c. Pathologic findings:
   i. Short (or Transverse) Axis. In its short axis, an intussusception will have the classic "target" or "donut" appearance in which multiple layers or concentric rings of bowel can be seen. The outermost layer is the hypoechoic muscularis layer of colon with the intussuscepted bowel wall just interior. The central hyperechoic region is composed of small bowel mucosa and submucosa. Mesentery pulled into the center of the intussuscipiens will also appear hyperechoic
   ii. Long (or Sagittal) Axis. In its long axis, the intussusception may mimic the appearance of a kidney, which is known as the pseudokidney sign. Alternatively, the layers of the intussusception may also take on the appearance of a 'pitchfork' sign.
   iii. As bowel edema (outer wall thickness $>0.6cm)^2$ and ischemia worsen, the mucosal and submucosal layers are obliterated resulting in fewer layers/rings.
   iv. Decreased color flow in the intussuscepted bowel wall suggests a high likelihood of ischemia. Other signs of ischemia that may predict failed non-operative reduction includes echogenic foci in the bowel wall, representing translocated air, and free fluid trapped within the intussusception.
   v. Most commonly the intussusception will be found in the right side of the abdomen with the terminal ileum invaginating into the cecum.
   vi. Once a suspicious lesion is identified, it should be measured. Lesions measuring greater than 2-2.5 centimeters are highly suggestive of ileocolic intussusception and require intervention. Lesions less than 2 centimeters in diameter are more consistent with small bowel intussusception, which are typically managed conservatively.

5. Documentation

In performing CUS of the abdomen for intussusception, images are contemporaneously obtained, interpreted, and used in clinical decision making. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified, limitations of the exam, and an interpretation of the findings. Images

should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications
A linear array transducer with a frequency 13-5 MHz is optimal to image intussusception in most patients. Color Doppler can be helpful to assess vascular flow. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control Improvements, Safety, Infection Control and Patient Education
Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines

References

1. Bergmann KR, Arroyo AC, Tessaro MO, Nielson J, Whitcomb V, Madhok M, et al. P2 Network. Diagnostic accuracy of point-of-care ultrasound for intussusception: A multicenter, noninferiority study of paired diagnostic tests. *Ann Emerg Med*. 2021 Jul 2;S0196-0644(21)00340-1.
2. Lioubashevsky N, Hiller N, Rozovsky K, Segev L, Simanovsky N. Ileocolic versus small-bowel intussusception in children: Can US enable reliable differentiation? *Radiology*. 2013;269(1):266-71.

Pediatric Lung

1. Introduction
The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the lung in pediatric patients who present with respiratory symptoms. The sonographic evaluation of lung/ thoracic cavity for pneumothorax, pleural effusion, cardiogenic pulmonary edema, diaphragm movement, and other traumatic injuries are mentioned in the Lung/Pleura section and will not be repeated here. Instead, this section will focus on the pediatric patient in which interstitial lung disease, specifically pneumonia or bronchiolitis, is considered.

Recent meta-analyses have shown that lung ultrasound has a sensitivity of 94-96% and specificity of 93-95% in diagnosis of pediatric pneumonia.[1-3] On the other hand, the sensitivity and specificity of chest X-ray are 87% and 98.2%. Similarly, multiple studies have attested to the utility of ultrasound in bronchiolitis and found it to be safe, reproducible, and reliable[4]. A consistent correlation has been found between the number and extent of abnormalities on lung ultrasound and the clinical severity of bronchiolitis.[4-6] The American Academy of Pediatrics recommends avoidance of routine chest X-ray diagnosing bronchiolitis, so CUS can provide a useful tool for emergency physicians to rule out other pathologies without the risk of ionizing radiation.

CUS of the pediatric lung occurs as a component of the overall clinical evaluation of an infant or child with respiratory symptoms. The examination is focused, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a particular patient's condition. Other diagnostic or therapeutic interventions may take precedence or may proceed simultaneously with the CUS evaluation. While cross sectional imaging such as computed tomography (CT) may provide information that is more detailed than CUS, have greater anatomic specificity, or identify alternative diagnoses, CUS is non-invasive, is rapidly deployed and does not entail removal of the patient from the resuscitation area. Portable CUS

might be the only option in remote, low-resource, or austere environments. Furthermore, CUS avoids the potential of medical radiation exposure which is of greatest concern in pediatric patients. Pediatric lung CUS may be integrated with sonographic evaluation of multiple organ systems in the care of patients with time-sensitive or emergency conditions.

2. Indications/Limitations

a. Primary
   i. Detection of pneumonia
   ii. Detection of pleural effusion
   iii. Detection of pneumothorax

b. Extended
   i. Detection of bronchiolitis
   ii. Detection of other interstitial processes (eg, cardiogenic pulmonary edema, pulmonary contusion, acute respiratory distress syndrome (ARDS), COVID-19
   iii. Detection of diaphragm movement

c. Contraindications
   There are currently no absolute contraindications for performing pediatric lung CUS. Relative contraindications include open wounds of the chest, or when CUS would delay the care of an unstable/critical patient.

d. Limitations
   i. CUS of the lung is a focused application and therefore cannot identify all abnormalities in the lung. CUS is an adjunct to the institutional standard of care, and similar to other diagnostic tests, it should not replace clinical judgment and should be used to complement the practitioner's decision-making process. If the findings of the CUS are equivocal, and the clinical picture is concerning, then further imaging may be necessary.
   ii. CUS may be technically limited by:
      1. A patient's body habitus including obesity or chronic conditions, which may include physical disabilities that can make obtaining optimal images challenging.
      2. Chronic conditions, such as cystic fibrosis or prior pulmonary surgeries, due to presence of abnormal baseline findings.
      3. Congenital conditions such as bronchogenic cyst, congenital lobar emphysema, bronchopulmonary sequestration, pulmonary arteriovenous malformation, and adenomatoid malformation due to presence of abnormal baseline findings. These conditions are out of scope of CUS.
      4. Presence of subcutaneous emphysema (eg, from pneumothorax). Subcutaneous air artefacts can be reduced by firm compression of the probe on the skin.
      5. Inability to obtain full evaluation of the entire lungs due to an uncooperative patient, time constraint, an unstable patient, severe spinal curvature, etc.

e. Pitfalls
   i. Organs such as liver, spleen, heart, thymus, stomach, and intestines may be mistaken for consolidated lung or pleural effusion.
   ii. Atelectasis can appear very similar to consolidated lung on ultrasound. Thus, it is very important to take clinical context and surrounding anatomy into account.
   iii. CUS may not detect pathology in areas beyond the range of the probe such as deep lung tissue, or areas inaccessible by the ultrasound wave such as lung parenchyma underneath the scapula or perihilar areas.
   iv. Subcutaneous emphysema may generate shadowing artifacts and be mistaken as B-lines or completely limit deep imaging.
   v. Basing diagnosis on CUS findings alone without consideration of the overall clinical picture.
   vi. Failure to maintain a wide differential diagnosis in cases of atypical CUS findings or patient presentation.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the pediatric lung provides immediate information upon which a decision for further evaluation, management and interventions are based. An accurate diagnosis of pneumonia by CUS impacts patient care directly and qualifies as the practice of medicine. Therefore, performing and interpreting CUS is the responsibility of the treating physician.

Due to the time-critical nature of pneumonia and other lung infections, further treatment interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform an appendix ultrasound examination. Training should be in accordance with specialty or organization specific guidelines.

4. Specifications for Individual Examinations

a. General

The patient may be upright or recumbent when undergoing lung CUS. Posterior views might be obtained in lateral decubitus or prone position for patients unable to be positioned upright without support. Images should be captured in real time for documentation and/or future quality review.

b. Technique

i. Overview. For comprehensive interrogation of the lungs, a 12-view, 6-zone technique is recommended. This includes the anterior, lateral, and posterior lung zones which are visualized by placing the probe in the midclavicular line, the midaxillary line, and the midscapular line, respectively. Images are typically acquired in sagittal plane, however rotating into transverse plane may provide additional detail if pathology is suspected. and the Transverse and sagittal views should be obtained for each zone. For patients with a larger body habitus, each zone may be subdivided into superior and inferior subzones, or medial and lateral subzones. Generally speaking, the footprint of the ultrasound probe should fully interrogate the area of each zone in order to adequately visualize the lung parenchyma underneath. Additional views may also be obtained for further clarifications of abnormal findings. Ideally, each intercostal space should be systematically interrogated for abnormal findings. It is yet unknown whether a focused, abbreviated exam with limited windows might be adequate to rule out major pathology when compared to a more comprehensive approach.

ii. Key components of the examination. Imaging generally begins in the sagittal plane, with the probe placed perpendicular to the ribcage and marker pointing towards the head of the patient. Ribs with hyperechoic anterior periosteum and prominent posterior shadowing should be used as landmarks. Lung pleura appears as a smooth, hyperechoic line between and immediately below the level of the ribs. Immediately below the pleura is the lung parenchyma, which appears as a granular area with superimposed, regularly spaced A-lines.[7] Pleural sliding corresponding to lung movement with respirations should be visualized in real-time. M-mode can be used to assist in detection of diaphragm movement. To obtain views in the transverse plane, the ultrasound probe can be rotated approximately 90 degrees counterclockwise with the probe marker pointing towards the left side of the operator. The goal in this view is to avoid rib shadow, and image within a single intercostal space.

c. Pathologic findings

This section will not discuss the findings for pneumothorax, pleural effusion, cardiogenic pulmonary edema, acute respiratory distress syndrome, or traumatic injury as they are mentioned elsewhere in this compendium (see Lung/Pleura section).

i. Pneumonia

The major finding of pneumonia is lung consolidation, which appears as a well-defined, isoechoic to hypoechoic area that often moves with respirations. Consolidated, non-aerated lung tissue is an excellent conductor of sound waves. As a result, affected lung parenchyma

are sonographically visible, a phenomenon referred to as "hepatization." A thickened, irregular pleural line may be seen in pneumonia extending to the lung margin. Air-bronchograms refers to the multiple lenticular or branch-like hyperechoic structures seen within consolidated lung tissue, corresponding to air trapped in smaller airways. Dynamic air bronchogram refers to movement of these hyperechoic structures with respiration visualized in real-time, corresponding to the interface of air and secretions moving back and forth in smaller airways, and is pathognomonic for pneumonia. Other features seen in association with pneumonia include surrounding effusion and focal B-lines. Pneumonia may progress to an empyema, which is a heterogeneous collection of fluid (pus) in the pleural cavity that may have internal debris with septations and stranding. This can be distinguished from a simple anechoic effusion that is anechoic and homogeneous in nature.

ii. Bronchiolitis/interstitial pneumonitis

Bronchiolitis is a common viral infection in young children and infants that is characterized by inflammation and congestion in the small airways (bronchioles) of the lung. The hallmark sonographic feature of bronchiolitis is the presence of pathologic B-lines, which are hyperechoic, reverberation artifacts radiating down from the pleura. Scattered or isolated B-lines can be seen in patients with normal lungs. Pathological B-lines associated with bronchiolitis are those that are closely spaced (generally > 3 per intercostal space), densely fill the entire interspace, or are found in multiple lung zones. Other commonly seen features in bronchiolitis include pleural thickening/ irregularities and single or multiple subcentimeter consolidations. B-lines in bronchiolitis tend to be diffuse, bilateral, and not limited to dependent areas. Generally, the number/ density of B-lines and associated consolidations tends to correlate with the severity of disease.

While bronchiolitis is the most common etiology of pathologic B-lines on CUS in young pediatric patients, conditions such as cardiogenic pulmonary edema, pulmonary contusion, ARDS, transient tachypnea of the newborn, and COVID-19 can also lead to interstitial pneumonitis. These conditions can give rise to B-lines of various distributions and densities. For example, B-lines in cardiogenic pulmonary edema tend to be more concentrated in dependent areas, while those in pulmonary contusion tend to be isolated to affected traumatic areas. B-lines of ARDS and COVID-19 tend to be diffuse and can be coalescent in severe cases, resulting in a "whiting out" of the lung fields on CUS.

5. Documentation

In performing CUS of the pediatric lung, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Documentation of the lung CUS should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examination, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A linear transducer with frequencies of 15-5MHz is appropriate. In some cases, a curvilinear transducer 5-2MHz may be preferred for increased depth of view, but the resolution of the visualized structures may be compromised. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education
Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Pereda MA, Chavez MA, Hooper-Miele CC, et al. Lung ultrasound for the diagnosis of pneumonia in children: a meta-analysis. *Pediatrics*. 2015;135(4):714-22.
2. Orso D, Ban A, Guglielmo N. Lung ultrasound in diagnosing pneumonia in childhood: a systematic review and meta-analysis. *J Ultrasound*. 2018;21(3):183-95.
3. Balk DS, Lee C, Schafer J, et al. Lung ultrasound compared to chest X-ray for diagnosis of pediatric pneumonia: A meta-analysis. *Pediatr Pulmonol*. 2018;53(8):1130-9.
4. Di Mauro A, Ammirabile A, Quercia M, et al. Acute Bronchiolitis: Is there a role for lung ultrasound? *Diagnostics (Basel)*. 2019;9(4):172.
5. Supino MC, Buonsenso D, Scateni S, et al. Point-of-care lung ultrasound in infants with bronchiolitis in the pediatric emergency department: a prospective study. *Eur J Pediatr*. 2019;178(5):623-632.
6. Özkaya AK, Yilmaz HL, Kendir ÖT, Gökay SS, Eyüboğlu İ. Lung ultrasound findings and bronchiolitis ultrasound score for predicting hospital admission in children with acute bronchiolitis. *Pediatr Emerg Care*. 2020;36(3):e135-e142.
7. Lichtenstein DA. Lung ultrasound in the critically ill. *Ann Intensive Care*. 2014;4(1):1.

Pediatric MSK

1. Introduction
The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of musculoskeletal systems (MSK) in pediatric patients.

Ultrasound allows the practitioner to rapidly assess patients for pathology that is difficult or impractical to assess by other means. Pediatric musculoskeletal ultrasound has many of the same indications, scopes, technique, and requirements as those done in adults. However, the presence of growth plates adds a level of complexity to these evaluations. Evidence of surrounding hematoma or inflammation as well as knowledge of MSK anatomy can be helpful to distinguish a fracture from a growth plate. If doubt remains, imaging of the contralateral side for comparison can be helpful.

This section will discuss three musculoskeletal CUS applications that are unique to the pediatric patient: elbow fractures, skull fractures, and hip effusions.[1-3] Each is a clinically focused examination, which, in conjunction with history, physical examination and other imaging, can provide useful information for decision-making and patient care.

2. Indications/Limitations
a. Primary
   i. Elbow fracture
      Joint effusion
   ii. Skull Fracture
      Evaluation of skull fractures in infants.
   iii. Hip Effusion
      Evaluation of hip effusion in the setting of limp, pain, or limited range of motion.
b. Extended

i. Elbow fracture
   1. Lipohemarthrosis of the olecranon fossa
   2. Identification of fracture - supracondylar, lateral condylar, proximal ulna or radius

ii. Skull Fracture
   None

iii. Hip Effusion
   1. Guidance for joint aspiration.
   2. Identification of fractures and dislocations

c. Contraindications - all three conditions
   Need for immediate operative management

d. Relative contraindications - all three conditions
   Significant pain or open wounds over the area to be scanned

e. Limitations
   i. Elbow fractures
      i. The finding of an elevated fat pad can be non-specific and is not always associated with a cortical irregularity.
      ii. Although it can be found in distal humerus fractures, more complex elbow fractures as well as radial head subluxation can also present with an elevated fat pad.
   ii. Skull fracture
      Limiting scanning to only areas of the skull that are directly underlying obvious scalp hematomas can miss fractures that are not directly underlying or are adjacent to the hematomas.
   iii. Hip effusion
      i. Identifying an effusion does not provide a definitive diagnosis, but rather informs the clinical decision making of the practitioner.
      ii. Ultrasound does not replace clinical judgment, especially when emergent surgical procedures are indicated
   iv. Younger pediatric patients may not be as cooperative, therefore limiting results
   v. Patient habitus - less common in this age group

f. Pitfalls
   i. Elbow fractures
      a. Patient positioning can cause false positives as well as false negatives; superficial inflammatory change, or structures such as tendons and ligaments can be misidentified as lipohemarthrosis.
      b. Viewing in two orthogonal planes can help to minimize the risk of this false positive.
   ii. Skull fracture
      a. Suture lines can be easily confused for fractures. Associated overlying or nearby scalp hematomas can be helpful to differentiate fractures from suture lines.
      b. Similarly, sutures are regular and can be traced to a fontanelle, whereas a fracture is jagged and may be displaced. Lastly, sutures are symmetric, so imaging of the contralateral side can inform the interpretation by the sonologist.
      c. The absence of a fracture does not rule out an intracranial bleed.
   iii. Hip effusion
      a. Superficial inflammatory changes such as cellulitis can be mistaken for effusions.
      b. Complicated effusion can similarly be mistakenly attributed to skin changes.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Pediatric MSK CUS is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by MSK CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of MSK pathology, interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform MSK ultrasound as long as they are familiar with both pediatric musculoskeletal anatomy/development, as well as the appearance of both normal and abnormal bony, skin, and soft tissue findings. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of MSK disease, as outlined above.

4. Specifications for Individual Examinations

a. General - The MSK examination can be performed at the patient's bedside. Optimal patient positioning and pain control should be achieved prior to starting the exam. The family/guardians and the patient should be made aware of the benefits and limitations of CUS, including that it is limited in scope, does not use ionizing radiation, and is repeatable if necessary. The ultrasound probe is placed over the area of interest and imaging is performed in both sagittal and transverse planes. In pediatric patients, the provider should consider starting on the non-affected side to both gain the trust of the patient and awareness of growth plates and other symmetrical findings. The probe should be initially placed at the primary window and then be tilted, rocked and rotated to allow for real-time imaging of the area(s) involved. Interpretation should be done at the bedside immediately with performance of the real-time examination.

b. Technique
   i. Elbow fractures - With the patient's elbow flexed to 90 degrees, a high frequency linear probe is placed sagittally at the distal humerus visualized as a hyperechoic bony cortex. The linear probe should then be moved distally towards the elbow until the olecranon fossa is visualized as a concave pocket at the distal humerus. Both longitudinal and transverse views of the olecranon fossa should be obtained.
   ii. Skull fractures - Generously layer gel on the scalp of the infant to prevent pressure on a hematoma or potential fracture. Place the high frequency linear probe on the area of interest (either on the point of maximal tenderness or area of swelling). Evaluate the skull, which is visualized as the hyperechoic bony cortex, under the area of interest by fanning and sliding over the hematoma in two orthogonal planes. If no fracture is identified, extend the interrogated portion of the skull to include areas surrounding the hematoma as well.
   iii. Hip effusions - With the child lying supine, position the hip in a "frog leg" position (hip flexed, abducted, and externally rotated). The high frequency linear probe should be placed in a sagittal plane, parallel to the femoral neck, with the marker pointing towards the umbilicus. The femoral head, femoral neck, and ilopsoas muscle should be identified. Younger pediatric patients may have an open growth plate which is visualized as a smooth, regular, non-displaced space in the femoral head, otherwise known as the femoral capital epiphysis. Measure the distance between the anterior surface of the femoral neck and the posterior surface of the iliopsoas. Repeat on the contralateral side.

c. Pathologic findings
   i. Elbow fractures - Elevation of the posterior fat pad is defined as rise of the fat pad above the extension of the distal humeral line on longitudinal view or above a line connecting both lips of the olecranon fossa on transverse view. Elevation of the fat pad above that line raises concern for a distal humerus fracture. Lipohemarthrosis is identified when heterogeneous echodensities are noted within the fat pad.
   ii. Skull fractures - A skull fracture is identified as a cortical disruption or irregularity with or without surrounding hematoma.

iii. Hip effusion - An effusion is defined when the absolute size of the synovial fluid collection is >5 mm, or the affected side measures >2 mm larger than the unaffected side.

5. Documentation

When performing CUS images are contemporaneously obtained, interpreted, and used in clinical decision making. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified, limitations of the exam, and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

The Pediatric MSK applications described in this section involve superficial structures and therefore best visualization occurs with a high-frequency linear transducer (12-8MHz). Occasionally a low-frequency transducer curvilinear or phased array transducer of (5-2MHz) will be necessary to evaluate deep structures in larger sized patients. Both portable and cart-based ultrasound machines may be used.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education

Policies and procedures related to quality, safety, infection control, and patient concerns should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Rabiner JE, Khine H, Avner JR, Friedman LM, Tsung JW. Accuracy of point-of-care ultrasound for diagnosis of elbow fractures in children. *Ann Emerg Med.* 2012;61(1):9-17.
2. Rabiner JE, Friedman LM, Khine H, Avner JR, Tsung JW. Accuracy of point-of-care ultrasound for diagnosis of skull fractures in children. *Pediatrics*. 2013;131(6):e1757-e1764.
3. Vieira RL, Levy JA. Bedside Ultrasonography to identify hip effusions in pediatric patients. *Ann Emerg Med*. 2009;55(3):284-9.

RUQ - Hepatobiliary Ultrasound

1. Introduction

The American College of Emergency Physicians (ACEP) developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of the right upper quadrant (RUQ) in patients suspected of having acute hepatobiliary disease.

Abdominal pain is a common presenting complaint in the emergency department. Hepatobiliary disease is a frequent consideration among the possible etiologies. In many cases, CUS of the RUQ may be diagnostic for hepatobiliary disease, may exclude hepatobiliary disease, or may identify alternative causes of the patient's symptoms. If hepatobiliary disease is identified, CUS also guides disposition by helping to distinguish emergent, urgent, and expectant conditions.

CUS of the RUQ can be performed as a component of the overall clinical evaluation of a patient with abdominal pain, jaundice, or unexplained laboratory abnormalities (eg, elevated bilirubin). It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making. It attempts to answer specific questions about a

particular patient's condition. While other tests may provide information that is more detailed than CUS or identify alternative diagnoses, CUS is non-invasive, can be rapidly deployed, is repeatable and can be performed at the bedside. Further, CUS avoids the delays, costs, need for specialized technical personnel, administration of contrast agents, and risk of exposure to ionizing radiation of other imaging modalities. These advantages make CUS a valuable addition in the care of patients with time-sensitive or emergency conditions such as acute biliary colic choledocholithiasis cholecystitis, or choledocholithiasis, as well as other causes of abdominal pain.

2. Indications/Limitations

a. Primary
   Identification of symptomatic cholelithiasis
   i. Identification of Cholecystitis

b. Extended
   i. Common bile duct abnormalities, including dilatation and choledocholithiasis
   ii. Liver abnormalities, including tumors, abscesses, intrahepatic cholestasis, pneumobilia, hepatomegaly
   iii. Portal vein abnormalities
   iv. Abnormalities of the pancreas
   v. Other gallbladder abnormalities, including tumors
   vi. Unexplained jaundice
   vii. Ascites
   viii. Unexplained abnormal liver function tests

c. Contraindications
   There are no absolute contraindications to RUQ CUS. There may be relative contraindications based on specific features of the patient's clinical situation.

d. Limitations
   i. CUS of the RUQ is a single component of the overall and ongoing evaluation. Since it is a focused examination, CUS does not identify all abnormalities or diseases of the RUQ. CUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. If the findings of the CUS are equivocal, additional diagnostic testing may be indicated.
   ii. The primary focus of RUQ CUS is to identify or exclude gallstones and their complications. Other entities, including but not limited to hepatic masses/lesions, abnormalities of the pancreas, or abnormalities of the portal system may not be considered out of scope of CUS and identification by a limited and focused exam is not expected.
   iii. Examination of the RUQ may be technically limited by:
      1. Obese habitus
      2. Bowel gas
      3. Abdominal tenderness
      4. Inability of the patient to participate in the exam or position themselves
      5. Previous abdominal surgeries

e. Pitfalls
   i. When bowel gas or other technical factors prevent an adequate examination, these limitations should be identified and documented. As usual in emergency practice, such limitations may mandate further evaluation by alternative methods.
   ii. Failure to identify the gallbladder may occur with chronic cholecystitis particularly when filled with stones, or, in the rare instances of gallbladder agenesis. Failure to identify the gallbladder should warrant additional diagnostic imaging such as radiologic ultrasound or computed tomography (CT).
   iii. The gallbladder may be confused with other fluid filled structures including the portal vein, the inferior vena cava, hepatic or renal cysts, or loculated collections of fluid. These can be

more accurately identified with careful scanning in multiple planes and the use of color flow Doppler.

iv. Measurement of gallbladder wall thickness should be made on the anterior wall, adjacent to the hepatic parenchyma in the transverse plane, to limit error secondary to oblique imaging and posterior acoustic enhancement artifact. Measurement of posterior gallbladder wall thickness may be inaccurate due to layered gallstones, acoustic enhancement from bile, and closely opposed loops of bowel.
v. Small gallstones may be overlooked or mistaken for gas in an adjacent loop of bowel. In questionable cases, gain settings should be optimized, the area should be scanned in several planes, and the patient should be repositioned to check for the mobility of gallstones.
vi. Gas in loops of bowel adjacent to the posterior wall of the gallbladder may be mistaken for stones. Intraluminal gas can be distinguished by noting peristalsis and specifically identifying the bowel wall. Stones are characterized by anechoic shadowing and should be visualized within the gallbladder in two orthogonal imaging planes.
vii. Small stones in the gallbladder neck may easily be overlooked or mistaken for lateral cystic shadowing artifact (ie, edge shadows). It may be necessary to image this area in several planes to avoid this pitfall.
viii. The sensitivity for identifying common bile duct stones is low and often are only identified by the shadowing they cause or an abrupt narrowing of the common bile duct.
ix. Cholesterol stones are often small, less echogenic, may float, and may demonstrate comet tail artifacts.
x. Pneumobilia and emphysematous cholecystitis are subtle findings and may produce increased echogenicity and comet–tail artifact caused by gas in the biliary tree and gallbladder wall.
xi. Polyps may be mistaken for gallstones. The former are non-mobile, do not shadow, and are adjacent and attached to the inner gallbladder wall. In certain circumstances polyps in the neck of the gallbladder can cause obstruction.
xii. Gallbladder wall thickening may not represent biliary pathology, but may be physiological, as in the contracted, post-prandial state, hypoproteinemia, liver disease, anasarca, and congestive heart failure.
xiii. The presence of gallstones or other findings consistent with cholecystitis does not rule out the presence of other life-threatening causes of abdominal pain such as aortic aneurysm or myocardial infarction.
xiv. Except for emergency physicians with extensive experience in CUS, evaluations of the liver, pancreas and Doppler examination of the portal venous system are not part of the normal scope of CUS of the RUQ.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

CUS of the RUQ provides information that is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by RUQ CUS represent the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of abdominal pain and biliary pathology, emergency interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform biliary ultrasound. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute biliary disease, as outlined above.

4. Specifications for Individual Examinations

a. General –Organs and structures evaluated in the RUQ are scanned systematically in real time through all tissue planes in at least two orthogonal directions. The primary focus of the hepatobiliary CUS examination is the identification of gallstones and their complications (eg, impacted stone, cholecystitis). Examination of the liver and biliary tree, as described in "Extended Indications," are performed based on the clinical situation and the emergency physician's ultrasound experience.

b. Technique

i. Identification

1. Gallbladder. The normal gallbladder is highly variable in size, shape, axis, and location. It may contain folds and septations and may lie anywhere between the midline and the midaxillary line. The axis and location of the porta hepatis are also highly variable. Orientation of the images of the gallbladder and common bile duct are conventionally defined with respect to their axes as longitudinal, transverse, and oblique.
In most cases, the gallbladder lies immediately posterior to the inferior margin of the liver in the mid-clavicular line. In some patients, the fundus may extend several centimeters below the costal margin; in others, the gallbladder may be high in the hilum of the liver, almost completely surrounded by hepatic parenchyma. In order to avoid confusing it with other fluid-filled tubular structures, the entire extent of the gallbladder should be scanned in its long and short axes.
2. Common bile duct. It is usually located by following the neck of the gallbladder to the portal triad where it can be found in conjunction with the portal vein and the hepatic artery. The use of color Doppler helps identify vascular structures from the common bile duct.

ii. Real-time scanning technique

1. Overview: A curvilinear probe with a frequency range of 2.0-5.0 MHz is generally used. A small footprint or phased array probe may facilitate scanning between the ribs. As with other CUS, the organs of interest are scanned methodically through all tissue planes in at least two orthogonal directions.
2. In most patients, the inferior margin of the liver provides a sonographic window for the gallbladder below the costal margin. In many cases, this window can be augmented by asking the patient to take and hold a deep breath. It may also be helpful to place the patient in a left decubitus or reverse Trendelenburg position. The transducer is placed high in the epigastrium with the indicator in a cephalad orientation. The probe is then swept laterally while being held immediately adjacent to the costal margin. The liver margin should be maintained within the field of view on the screen.
3. In patients whose liver margin cannot be visualized below the costal margin, an intercostal approach may be necessary. To perform this, the patient should be in the supine position. The probe is swept laterally from the sternal border to the midaxillary line until the gallbladder is located. If there is difficulty in locating the gallbladder in an intercostal view, the patient can be placed in Trendelenburg position and imaging can be performed during patient exhalation.
4. Once the gallbladder has been located, its long and short axes should be examined. In the long axis, images are obtained, by convention, with the gallbladder neck on the left of the screen, and the fundus on the right (generally with the probe indicator to 12-1 o'clock). The gallbladder is scanned systematically through all tissue planes in both the long and short axis views. In many patients, a combination of subcostal and intercostal windows can allow for views of the gallbladder from multiple directions and may help identify small stones, the gallbladder neck, the common bile duct, and with resolving artifacts.

5. The common bile duct is most easily located sonographically by finding and identifying the portal vein and hepatic artery, which comprise the portal triad. Several techniques can be used to locate the common bile duct. These include tracking the hepatic artery from the celiac axis, tracking the portal vein from the confluence of the splenic and superior mesenteric veins, and following the portal vessels in the liver to the hepatic hilum. In a transverse view of the portal triad, the common bile duct and hepatic artery are typically seen superficial to the portal vein. The common bile duct is usually more lateral than the hepatic artery or more to the left on the screen. In a longitudinal view of the portal triad, the common bile duct will be located superficial and parallel to the portal vein, while the hepatic artery will be perpendicular. The common bile duct can also be distinguished by its absence of a color flow Doppler signal.

iii. Key components of the exam. The gallbladder is systematically scanned with particular attention to the neck. For patients with a low-lying gallbladder, the fundus may be obscured by gas-filled colon. Left lateral decubitus positioning or inhalation may help provide adequate windows in this situation. The principal abnormal finding is gallstones that are echogenic with distal shadowing. Measurement of wall thickness is made on the anterior wall between the lumen and the hepatic parenchyma. Measurements of gallbladder size are rarely helpful in CUS, although gross increases in transverse diameter or overall size may be evidence of cholecystitis and hydrops, respectively. A qualitative assessment of the wall and pericholecystic regions should also be made, looking for mural irregularity, breakdown of the normal trilaminar mural structure, and fluid. A Sonographic Murphy's sign can also be assessed by applying pressure to the gallbladder that elicits pain and a separate location in not over the gallbladder that elicits no pain.

   The common bile duct, like other tubular structures, is most accurately measured when imaged in a transverse plane. The common bile duct should be measured by the intraluminal diameter (i.e., inside wall to inside wall). Anatomically, it is preferable to measure the common bile at its largest diameter, which typically occurs extra-hepatic. Identification of the common bile duct in this location is best achieved with long axis visualization, rather than the transverse orientation. Becoming facile with imaging in both planes is a key element to successful measurements of the common bile duct. Evaluation of the common bile duct may reveal shadowing suggesting stones and/or comet-tail artifact suggesting pneumobilia. When unclear, additional diagnostic testing should be performed.

iv. Pathologic findings
   1. Cholelithiasis - Gallstones are often mobile (move with patient positioning) and usually cause shadowing. Optimization of gain, frequency, and focal zone settings may be necessary to identify small gallstones and to differentiate their shadows from those of adjacent bowel gas. The wall-echo-shadow (WES) sign may indicate the presence of densely packed gallstones without biliary fluid in the gallbladder. In the case of a WES sign, the normally fluid-filled gallbladder is replaced by an echogenic line and clean shadow posteriorly. This should be suspected in a patient who has not had a cholecystectomy but the gallbladders in not visualized.
   2. Cholecystitis - This diagnosis is based on the entire clinical picture in addition to the findings of the CUS. The following sonographic findings support the diagnosis of cholecystitis.
      a. A thickened, irregular, or heterogeneously echogenic gallbladder wall. Anterior wall thickness greater than 3 millimeters is considered abnormal. Inflammation is not a uniform process, and the wall should be measured at its thickest location.
      b. Pericholecystic fluid may appear as hypoechoic or anechoic regions seen along the anterior surface of the gallbladder adjacent to the hepatic parenchyma.

   c. A Sonographic Murphy's sign is tenderness reproducing the patient's abdominal pain elicited by probe compression directly on the gallbladder, combined with the absence of similar tenderness when it is compressed elsewhere.
   d. Increased transverse gallbladder diameter greater than 5 cm may be evidence of obstructive cholecystitis.
3. Common bile duct dilatation - The normal upper limit of common bile duct diameter has been described as 4-6 mm, although several studies have demonstrated increasing diameter with aging in patients without evidence of biliary disease. For this reason, many authorities consider that the normal common bile duct may increase by 1 mm for every decade of age.[1]
4. Pathologic findings of the liver and other structures are beyond the scope of the CUS.

5. Documentation

In performing CUS of the RUQ, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Documentation of the RUQ CUS should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the organs or structures identified any limitations experienced during the exam, and an interpretation of the findings. Images should be stored as a part of the medical record and in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A curvilinear transducer with frequencies of 2.0-5 .0 MHz is appropriate. A small footprint curved array probe or phased array probe can facilitate intercostal scanning. Both hand-held and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Horrow MM, Horrow JC, Niakosari A, Kirby CL, Rosenberg HK. Is age associated with size of adult extrahepatic bile duct: sonographic study. *Radiology*. 2001;221(2):411-4.

Soft Tissue/Musculoskeletal

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound (CUS) studies of soft tissue and musculoskeletal systems (ST-MSK).

Ultrasound allows the practitioner to rapidly assess patients for pathology that is difficult or impractical to assess by other means. Primarily, ultrasound can aid in the classification of soft tissue infection, localization of foreign bodies (FB), detection of joint effusions and guidance of arthrocentesis. Secondarily, ultrasound can aid in the diagnosis of deep space infection, guidance of foreign body removal, fracture detection and reduction, and evaluation for ligament and tendon

pathology. It is a clinically focused examination, which, in conjunction with history, physical examination and other imaging, provides important data for decision-making and patient care.

2. Indications/Limitations

a. Primary
   i. Soft tissue: sonographic evaluation of
      1. Cellulitis versus abscess
      2. Evaluation of bursitis
      3. Foreign bodies
   ii. Musculoskeletal
      1. Evaluation of joint effusion
      2. Guidance of arthrocentesis

b. Extended
   i. Soft tissue
      1. Identification of deep space infection
      2. Guidance of foreign body removal
      3. Identification of hematoma
   ii. Musculoskeletal
      1. Fracture detection and reduction
      2. Identification of tendon/ligament injury
      3. Joint dislocation assessment
      4. Diagnosis of tenosynovitis

c. Contraindications
   Need for immediate operative management

d. Relative contraindications
   Significant pain or open wounds over the area to be scanned

e. Limitations
   Ultrasound does not replace clinical judgment, especially when emergent surgical procedures are indicated.

f. Pitfalls
   i. Soft tissue
      1. Infection
         a. Early in the infectious course, classic sonographic findings of soft tissue infection may not be present.
         b. Deep space infections may be difficult to detect secondary to inadequate penetration with higher frequency transducers and settings.
         c. Abscesses typically have variable internal densities and consistencies, so sonographic appearance can also be variable.
         d. The appearance of cellulitis is indistinguishable from sterile edematous tissue. In these scenarios, sonographic findings should be interpreted in the context of the clinical history.
         e. Soft tissue seroma and hematoma may be difficult to distinguish from infectious fluid collections however detailed history and physical can inform this distinction.
      2. Bursitis
         a. US alone cannot determine septic from non-septic bursitis, aspiration is required to make the diagnosis. In these scenarios, sonographic findings should be interpreted with clinical context.
         b. Bursal distention is usually unilocular and compressible but can be confused for other structures such as ganglion cysts which are usually multilocular and non-compressible.

c. Most non-distended deep bursae are difficult to visualize.

3. Foreign body identification
   a. Small FBs (< 2 mm) may be difficult to detect and require careful and methodical examination.
   b. Superficial foreign bodies can also be difficult to detect since they are not typically located within the optimal focal zone of the sonographic window.
   c. Confined spaces, such as web interspaces, can be difficult to image due to the contours of the transducer.
   d. FBs adjacent to bone can be difficult to detect. Sonographers typically use shadowing or other artifacts as an important visual cue for presence of FB, and these may be obscured by closely adjacent bone.
   e. Other echogenic material in the skin, such as air, scar tissue, ossified cartilage and keratin plugs, may produce false positive findings.
4. Foreign body localization and removal – see 'Ultrasound Guided Procedures" criteria.

ii. Musculoskeletal
1. Ultrasound has been shown to be highly accurate in the detection of long bone fractures. Certain fractures may be difficult to detect, including:
   a. Non-displaced fractures
   b. Small avulsion fractures
   c. Fractures involving
      i. Articular surfaces
      ii. Intertrochanteric regions
      iii. Hands and feet
   d. Open growth plates in pediatric can be misinterpreted as acute injury
2. Joint effusions are occasionally difficult to detect if they are:
   a. Very small in size
   b. Early in an infectious course
3. Ligaments and tendons require careful and methodical evaluation since:
   a. Incomplete lacerations may be difficult to visualize
   b. Anisotropy may lead to misinterpretation of the sonographic images
   c. Early in the infectious course, the typical sonographic findings of tenosynovitis may not be present

3. Qualifications and Responsibilities of the Clinician Performing the Examination

ST-MSK CUS is the basis of immediate decisions concerning further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by ST-MSK CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of many causes of soft tissue-MSK pathology, interventions may be undertaken based upon findings of the CUS exam. For this reason, CUS should occur as soon as the clinical decision is made that the patient needs a sonographic exam.

Physicians of a variety of medical specialties may perform ST-MSK ultrasound. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of ST-MSK disease, as outlined above.

4. Specifications for Individual Examinations

a. General. The ST-MSK examination can be performed at the patient's bedside and requires little patient preparation except for positioning in the bed and control of significant pain in the scanning area if present. The ultrasound probe is placed over the area of interest and imaging is

performed in both sagittal and transverse planes. The probe should be initially placed at the primary window and then be tilted, rocked and rotated to allow for real-time imaging of the area(s) involved. This may take more time with difficult windows, challenging patients or other patient priorities. Interpretation should be done at the bedside immediately with performance of the real-time examination. Comparison to the contralateral "normal" side and dynamic imaging are both critical in ST-MSK sonography.

b. Technique
   i. Identification
      1. Dermal layer. Most superficial echogenic structure encountered (deep to the stand-off pad if one is being used).
      2. Subcutaneous fat. Located deep to the dermis, this is a relatively hypoechoic layer with a reticular pattern of interspersed echogenic connective tissue.
      3. Muscle tissue. Hypoechoic striated tissue typically found in bundles.
      4. Tendons/ligaments. Hyperechoic tissue with a fibrillar appearance in the long axis. Tendons can be observed to move as the corresponding joints are passively flexed and extended. Ligaments may be more difficult to visualize at ninety degrees to the ultrasound beam and therefore may appear more hypoechoic.
      5. Blood vessels. Anechoic with a circular profile when observed in a short axis.
      6. Bones. Bony cortices are brightly echogenic with posterior shadowing. Typically, only the most superficial surface of the bone will be visible.
      7. Nerves. Typically, hyperechoic and fibrillar in the long axis and with a honeycomb appearance in a short axis, nerves may be confused for tendons. Nerves usually do not move significantly with joint movement and are localized in relation to vascular structures.
      8. Lymph nodes. Are typically hypoechoic relative to surrounding soft tissue with a hyperechoic hilum. They have a cyst-like morphology meaning they are a sac-like pocket of tissue with defined borders. The recognition of abnormal lymph nodes is generally outside the scope of emergency medicine ultrasound practice.
   ii. Real-time scanning technique
      1. Overview. A high frequency linear or hockey stick transducer is typically employed for ST-MSK ultrasound. This enables high-resolution imaging but typically limits depth of penetration to a few centimeters. Imaging may be improved with certain devices such as stand-off pads or water bath to place the item of interest central in the focal zone. The items of interest should be scanned in 2 orthogonal planes.
      2. Soft tissue. The transducer is generally first dragged over an area of normal skin adjacent to the area of interest. As the transducer moves closer to the area of interest, the sonographer will assess for signs of cellulitis, abscess, or cutaneous foreign body. Of particular note, when interrogating a soft tissue abscess, the application of gentle pressure will often elicit movement within the abscess cavity and liquid contents are displaced (squish sign).
      3. Bones. In most instances, a high frequency linear array is used to evaluate bone for the presence of a fracture; however, depending on the depth of bone being visualized, a lower frequency probe may be necessary to assure adequate tissue penetration. The probe is placed in the long axis over the bone in question to visualize the hyperechoic bony cortex. The sonographer then slides the probe along the length of the bone looking for interruptions, step-offs, and angulations of the cortex. The same technique can then be repeated in the short axis to acquire more information. In some instances, a comparison of the contralateral bone may be helpful.
      4. Joint effusions: Due to the unique anatomy of individual joints, the scanning technique is variable. In general, the probe is placed in the long axis over the bone proximal or distal to the joint in question in order to visualize the hyperechoic bony cortex. Keeping the

cortex in view, the probe is slid toward the joint space looking for the presence of an anechoic/hypoechoic collection representing a joint effusion. The contralateral joint should be used for comparison.

5. Bursa: Ultrasound is useful for the evaluation of a symptomatic bursa. A high frequency linear array transducer is usually sufficient though may vary by location and patient size. A normal bursa will contain minimal to no anechoic or hypoechoic fluid and often measures less than 2 or 3 mm in thickness. While the distended bursa may show simple or complex fluid with or without synovial hyperemia. The bursa should be unilocular and compressible.
6. Tendons/ligaments: Ultrasound is useful for the detection of tendon and ligamentous lacerations, ruptures, and tenosynovitis. In most instances, a high frequency linear array transducer is used to evaluate the structure of interest. In addition, superficial tendons or ligaments may be better visualized with the use of a standoff or water bath technique. Visualized in long axis, tendons and ligaments appear hyperechoic and fibrillar, and move as the corresponding joint is ranged. Disruption is most easily seen in the long axis. If infection is suspected, the sonographer should assess for fluid collections surrounding the tendon, which can be seen in either axis.

iii. Key components of the exam

1. Soft tissue. The normal/unaffected skin should be scanned prior to scanning the suspected infectious region. This comparison may aid in the recognition of subtle findings suggestive of soft tissue infection. In the assessment for abscess, the sonographer should remember that different internal densities of the abscess will lead to different echogenicities in the sonographic window. Gentle pressure should be applied to elicit movement within the abscess cavity, confirming the presence of pus. Foreign bodies can be difficult to locate, but several techniques improve visualization: scanning slow and methodically, imaging in multiple planes (to detect obliquely oriented objects), utilizing a standoff pad or water bath technique for superficial objects and ideally, imaging the foreign body directly perpendicular or parallel to its long axis. Familiarity with adjacent anatomic structures will allow the discernment of foreign bodies from muscle, nerve, fascia, tendon, blood vessels, bone and subcutaneous air.
2. Bones. Ultrasound has good diagnostic accuracy in the detection of upper and lower limb fractures, especially in the foot and ankle, in adult patients.[1] The identification of small bone fractures is relatively uncomplicated given the high resolution and shallow field of view of the linear transducer. When used to assess progress in fracture reduction, ultrasound coupling gel may make reduction difficult by making the surfaces slippery. The gel should be wiped away with a towel before further attempts at reduction. When examining for femur fractures, a curvilinear transducer is helpful to obtain the depth necessary for imaging deep to the thick quadriceps muscles.
3. Joint effusions. Knowledge of the sonoanatomy of the individual joints is of the utmost importance. In most instances, a high frequency linear array is used; however, in deeper joints (ie, hip, shoulder) a lower frequency probe may be needed to assure adequate tissue penetration
4. Bursa. Knowledge of the anatomic locations of native bursae is important when evaluating joint swelling with concerns for bursitis. A high frequency linear array probe is used to slide and sweep over the area of interest to evaluate the fluid contents and walls of the bursa. Color Doppler can be used to evaluate for hyperemia of the walls, Lastly, evaluate for compressibility of the bursa. The contralateral bursa should also be evaluated for comparison.
5. Tendons/ligaments. Tendons should be imaged from multiple angles to minimize the effect of anisotropy. This sonographic artifact is usually hypoechoic and triangular, and mimics a disruption in the tendon or ligament, but will correct as the transducer is moved

and the beam strikes the structure at 90 degrees. Tendons may also be easily identified by ranging the accompanying joint and observing for movement of the tendon.

iv. Pathologic findings
    1. Cellulitis. Sonographic findings suggestive of cellulitis are non-specific but include tissue thickening, increased echogenicity of the subcutaneous tissue and reticular regions of hypoechoic edema which may yield a cobblestone-like appearance. Differentiating bands of edematous fluid from irregular collections of pus can be difficult. CUS is particularly useful in clinical scenarios where the presence of cellulitis versus abscess is unclear.[2]
    2. Abscess. A subcutaneous abscess may have a variety of appearances. In general, a hyperechoic rim of edematous tissue surrounds an elliptical or spherical-shaped, hypo-echoic fluid-filled cavity which demonstrates posterior acoustic enhancement. At times, however, an abscess can be irregularly shaped, lack a clear surrounding rim and demonstrate variable degrees of internal echogenicity due to purulent material, debris, septae or gas. Color flow Doppler can help confirm the absence of flow within the cavity and may reveal a region of hyperemia surrounding the abscess. Pressure applied over the infected region may reveal mobility of the purulent material within the cavity, helping to confirm its liquid nature. Prior to drainage of an abscess, recognition of surrounding anatomic structures (blood vessels, muscles, tendons, nerves) is essential. Gas in the fluid collection may consist of scattered hyperechoic points with or without reverberation artifact. Larger amounts of air may coalesce and create hyperechoic lines with distal shadow. While soft tissue air is an abnormal finding, if the abscess is actively draining the clinical significance of air is less clear compared to a non-draining abscess.
    3. Bursitis. A distended bursa reveals a fluid collection with either simple anechoic or complex hypoechoic or heterogenous fluid. Synovial hyperemia may also be present which is typically hypoechoic compared to the surrounding subcutaneous fat but may vary in echogenicity. Color Doppler can be used to evaluate for hyperemia of the bursae walls.
    4. Foreign bodies. Foreign bodies typically appear hyperechoic and may display variable degrees of artifact. Metal and glass tend to produce reverberation artifact. Wood, gravel, and plastic are hyperechoic with a trailing shadow. Substances that have been present in the body longer than 24 hours typically have a small amount of surrounding inflammatory fluid, which appears as an anechoic halo surrounding the hyperechoic material.
    5. Foreign body localization and removal. See “Ultrasound Guided Procedures” criteria.
    6. Deep space infections. In order to assure adequate tissue penetration, a lower frequency transducer may be needed. The diagnosis of necrotizing fasciitis with ultrasound has not been studied systematically and thus ultrasound should not be utilized to exclude this diagnosis. A number of sonographic findings suggestive of this disease have been described including thickening of the subcutaneous fascia, a fluid layer > 4 mm adjacent to deep fascia and subcutaneous gas.[3]
    7. Joint effusions. Joint effusions are easily seen by ultrasound as hypoechoic fluid collections in the joint space. The transducer is dragged along the long axis of the bone towards the articular surface. There, a V-shaped depression will be seen that is formed by the articular surface of the connecting bone. If a simple effusion is present this space will be filled by hypoechoic fluid collection. The precise location of the largest fluid collection may then be easily marked for aspiration. Extended applications of CUS for joint effusion include assessment for hemarthrosis and gout. Ultrasound of a hemarthrosis may reveal complex fluid with heterogeneous echos. In patients with gout an irregular band over the superficial margin of the articular cartilage described as the “double contour sign” may be visualized.[4] CUS should not replace arthrocentesis in a patient where septic arthritis is being considered.

8. Arthrocentesis. A joint effusion may be aspirated using static or dynamic visualization techniques.
    a. Static – The ultrasonographer visualizes the joint effusion and marks the overlying skin in two distinct planes noting the depth of the fluid as well as the optimal angle of entry. The probe is then removed, and the joint tapped using standard technique.
    b. Dynamic – The sonographer obtains a view of the joint effusion and under direct visualization uses the ultrasound to guide their needle into the most readily accessible fluid collection. This may be done in short or long axis depending on the site and sonographer preference.
9. Fractures
    a. Small bone fractures: Ultrasound may be helpful in the identification of small fractures, or those not easily or practically imaged with conventional radiography. These include facial fractures, rib fractures, and nasal bone fractures. The sonographer typically first identifies the hyperechoic bony cortex. Then, the transducer is dragged along the surface of the bone in both orthogonal planes as the continuity of the cortex is carefully assessed. Since the window depth of a high frequency transducer is 1-5 cm, fractures displaced by as little as a few millimeters will typically be obvious.
    b. Long bone fractures: Ultrasound is also helpful in the identification of long bone fractures. This includes use in austere environments such as the wilderness or battlefield. It may also be useful for a quick femoral survey in the hypotensive trauma patient when other sources of bleeding are not immediately obvious and bleeding into the femoral compartment is suspected. In this setting, a curvilinear transducer is helpful to obtain the depth necessary for imaging deep to the thick quadriceps muscles.
10. Fracture reduction. Ultrasound is helpful in fracture reduction when other imaging is impractical. This is most evident during procedural sedation when quick radiographs cannot be obtained to assess the success of the procedure. The bone is intermittently assessed along sagittal, coronal, and axial planes for adequacy of reduction as the clinician attempts to bring the cortices into alignment.
11. Tendon/ligament lacerations and ruptures. The ultrasound probe is placed in the longitudinal and transverse planes over the structure of interest in an attempt to visualize partial and complete tears. Partial tears will appear as hypoechoic areas within the normal fibrillar tendon architecture, while complete lacerations and ruptures will extend through the entire length of the tendon in question. Active and passive range of motion of the tendon can help to assist in the presence or absence of pathology; scanning the contralateral body part for comparison may be useful as well.
12. Tenosynovitis. The ultrasound probe is placed in the longitudinal and transverse planes over the tendon in question in order to assess for the presence of an anechoic/hypoechoic area around the tendon representing a collection of fluid suggesting infection. In addition, infected tendons may demonstrate enlargement when compared to the contralateral side.
13. Joint dislocation. Ultrasound can be useful in a patient with suspected joint dislocation, particularly when the patient's habitus limits the physical exam or pain limits imaging quality. For shoulder dislocation the sensitivity and specificity for dislocation reaches 100%.[5] In this scenario, ultrasound can also be used to perform an intra-articular anesthetic block reducing the risk associated with procedural sedation and reduced ED length of stay. Like ultrasound for fracture reduction, ultrasound can be used for rapid assessment of successful relocation without having to move the patient or risk re-dislocation.

5. Documentation

In performing ST-MSK CUS, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Documentation of the ST-MSK CUS should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

Most of the applications described in this section involve superficial structures. Thus, optimal visualization occurs with linear ultrasound transducers at frequencies of 8.0-12.0 MHz. Occasionally, a curvilinear or phased array transducer of 2-5.0 MHz will be necessary to evaluate deeper structures such as in cases of suspected hip effusion/septic hip joint or deep space abscess. Endocavitary probes can be used to identify abscess formation in areas such as the oropharynx. Both portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control, and Patient Education

Policies and procedures related to quality, safety, infection control, and patient concerns should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Champagne N, Eadie L, Regan L, Wilson P. The effectiveness of ultrasound in the detection of fractures in adults with suspected upper or lower limb injury: a systematic review and subgroup meta-analysis. *BMC Emerg Med.* 2019;19:17.
2. Tayal VS, Hasan N, Norton HJ, Tomaszewski CA. The effect of soft-tissue ultrasound on the management of cellulitis in the emergency department. *Acad Emerg Med*. 2006;13(4):384-8.
3. Castleberg E, Jenson N, Dinh VA. Diagnosis of necrotizing faciitis with bedside ultrasound: the STAFF Exam. *West J Emerg Med*. 2014;15(1):111-3.
4. Thiele RG, Schlesinger N. Diagnosis of gout by ultrasound. *Rheumatology.* 2007;46(7):1116–21.
5. Gottlieb M, Russell F. Diagnostic accuracy of ultrasound for identifying shoulder dislocations and reductions: A systematic review of the literature. *West J Emerg Med*. 2017;18(5):937-942.

Resuscitative TEE

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing emergency ultrasound studies (CUS) of the heart in patients suspected of having emergent conditions where cardiac imaging may influence diagnosis or therapy.

During cardiopulmonary resuscitation, the primary role of cardiac CUS is the identification of cardiac activity. Cardiac CUS may also aid in the diagnosis or exclusion of primary or secondary causes of cardiac arrest. However, the presence of several factors such as obesity, presence of equipment on the chest wall, and insufflation of air into the stomach make transthoracic echocardiography (TTE) images suboptimal in many cardiac arrest scenarios. In addition, there is evidence showing that the use of TTE during cardiac arrest may prolong pulse check duration.[1]

Resuscitative transesophageal echocardiography (TEE) has emerged as an alternative modality to visualize the heart in patients presenting with cardiac arrest. A major advantage of TEE over TTE

includes the ability to obtain images of higher quality without cessation of chest compressions which allows for real time monitoring during cardiopulmonary resuscitation. Resuscitative TEE is a focused cardiac CUS performed during cardiopulmonary resuscitation that aids in the diagnosis or exclusion of etiologies of arrest, including cardiac tamponade, left ventricular systolic dysfunction, and right ventricular dilatation/dysfunction. Resuscitative TEE has also been shown to decrease the duration of pulse checks as compared to TTE.[2] Years of safety data collected from ambulatory TEE patients suggest the modality is safe to use in patients with minimal adverse outcomes; however, in the Emergency Department, focused TEE is generally limited to use in patients in cardiac arrest or in critically ill states where patients are intubated and sedated.[3] As with other CUS, resuscitative TEE can be rapidly deployed and does not require the patient to be removed from the resuscitation area, which is a critically important advantage in the cardiac arrest or peri-arrest patient. These advantages make resuscitative TEE a valuable imaging tool during cardiopulmonary resuscitation.

2. Indications/Limitations

a. Primary
   i. Evaluation of myocardial activity for evidence of cardiac standstill vs. organized contractions vs. disorganized myocardial activity.
   ii. Identification of etiology of cardiac arrest such as cardiac tamponade, left ventricular systolic dysfunction, and right ventricular dilatation/dysfunction.
   iii. Guidance of mechanical compressions in cardiopulmonary resuscitation.
   iv. Procedural guidance of pericardiocentesis, pacemaker wire and ECMO catheter placement.

b. Extended
   i. Identification of left ventricular regional wall motion abnormalities.
   ii. Identification of proximal aortic dissection or thoracic aortic aneurysm.

c. Contraindications
   i. Absolute contraindications to TEE include known esophageal obstruction, such as from a stricture or mass.
   ii. Resuscitative TEE requires intubation of the patient prior to TEE probe insertion.

d. Limitations
   i. Resuscitative TEE is a single component of the overall and ongoing evaluation. Since it is a focused examination, resuscitative TEE does not identify all abnormalities or diseases of the heart and does not replace clinical judgment. Findings of resuscitative TEE should be interpreted in the context of the entire clinical picture. Additional diagnostic testing may be indicated if any findings of the TEE are equivocal.
   ii. Comprehensive TEE is capable of identifying many conditions beyond the primary and extended applications listed above. These include but are not limited to the evaluation of the left atrial appendage for thrombi, evaluation of subtle valvular abnormalities, vegetations, or myxomas, or identification of septal defects. While the comprehensive TEE exam is outside the scope of many Emergency Physicians, it may be in scope for some EM providers, specifically those who are certified by the National Board of Echocardiography in Critical Care Echocardiography.
   iii. TEE should not be performed for diagnostic purposes on the hemodynamically stable patient.
   iv. Cardiac CUS is technically limited by:
      1. Oropharyngeal or esophageal obstruction/distortion
      2. Air within the esophagus
      3. Air within left main bronchus limiting evaluation of aortic arch and proximal aorta
      4. Necessity of intubation prior to probe insertion
      5. Pneumomediastinum

e. Pitfalls[4]

i. Pitfalls for the detection of pericardial effusion and cardiac tamponade are similar to that of TTE (please refer to TTE cardiac CUS section).
ii. Sonographic evidence of cardiac standstill should be interpreted in the context of the entire clinical picture.
iii. Foreshortening of cardiac chambers can occur if the omniplane is incorrectly placed. Retroflexion of the probe on the mid-esophageal 4 chamber view and anteflexion of the probe on the transgastric mid-papillary short axis view can mitigate foreshortening in order to fully evaluate the entire cardiac chamber.
iv. The TEE probe can be left in place throughout cardiopulmonary resuscitation and does not need to be removed for defibrillation.
v. When technical factors prevent an adequate examination, these limitations should be identified and documented. As usual in emergency practice, such limitations may mandate further evaluation by alternative methods.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Resuscitative TEE provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis by resuscitative TEE represents the practice of medicine and therefore is the responsibility of the treating physician.

Due to the time-critical and dynamic nature of cardiac arrest emergent interventions may be mandated by the diagnostic findings of a CUS examination. For this reason, resuscitative TEE should be performed by a qualified provider who has the available technology as soon as the clinical decision is made that the patient needs a sonographic evaluation and after determination that TTE views will be inadequate. If no TEE qualified provider is present during the resuscitation, or the ED facility has no access to a TEE transducer, care should default to traditional care with TTE CUS.

Physicians of a variety of medical specialties may perform resuscitative TEE. Training should be in accordance with specialty or organization-specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute cardiac disease, as outlined above.

4. Specifications for Individual Examinations

a. General - Images are obtained and interpreted in real time without requiring a pause in compressions during cardiopulmonary resuscitation. Patients will necessarily be intubated prior to insertion of the TEE probe. Images are ideally obtained in a supine position, though it is possible to perform TEE in the prone patient, if clinical scenario warrants. Images may be captured for documentation and/or quality review; however, given the emergent nature of resuscitative TEE, the exam should not be delayed for documentation purposes. As in TTE CUS, capturing moving images in video or cine loops with TEE is preferred to still cardiac images.
b. Primary resuscitative TEE views[4]
   i. Mid-esophageal 4 chamber
   ii. Mid-esophageal aortic long axis
   iii. Transgastric mid-papillary short axis
   iv. Mid-esophageal bicaval

c. Key components of the resuscitative TEE evaluation
   i. Evaluation of myocardial activity for evidence of cardiac standstill vs. organized contractions vs. disorganized myocardial activity.

      Cardiac standstill is demonstrated on CUS by the lack of myocardial contraction and has the

gravest of prognoses with 0.06% of patients surviving to discharge.[5] The decision to terminate resuscitative efforts should be made on clinical grounds in conjunction with the sonographic findings. Visualization of organized myocardial contractions vs. fine ventricular fibrillation or tachycardia may be indiscernible on TTE but clearly evident on resuscitative TEE and may therefore inform subsequent patient management.[6]

ii. Identification of etiology of cardiac arrest such as cardiac tamponade, left ventricular dysfunction, and right ventricular dilatation/dysfunction.[3,7]
   a. Hemodynamic instability with a moderate or large pericardial effusion, even without identifiable diastolic collapse, is suspicious for tamponade physiology.
   b. Assessment of the left ventricle may reveal hyperdynamic or an underfilled left ventricle which suggests hypovolemia. Evidence of depressed left ventricular systolic function suggests cardiogenic shock. At the treating physician's discretion, identification of regional wall motion abnormalities may suggest acute myocardial infarction.
   c. Evidence of right ventricular dilatation or right heart strain in conjunction with the patient's clinical context may increase suspicion for pulmonary embolism.

iii. Guidance of mechanical compressions during cardiopulmonary resuscitation.
   The internipple line commonly used as an anatomical landmark for mechanical compressions is more likely to be located over the LVOT or proximal aorta than over the left ventricle. Resuscitative TEE may be used to guide optimal compression location directly over the left ventricle as well as to monitor the quality and depth of compressions.[3,8]

iv. Procedural guidance of pericardiocentesis, pacemaker wire and ECMO catheter placement.
   a. Resuscitative TEE may be used to guide pericardiocentesis, pacemaker wire and ECMO catheter placement in cases where TTE is insufficient.[9,10]

5. Documentation

In performing CUS of the heart, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified and an interpretation of the findings. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed by archiving ultrasound images.

6. Equipment Specifications

A multiplane standard or disposable 2-10 MHz phased array TEE probe is sufficient for resuscitative TEE. It will be important to purchase a TEE probe that is compatible with the institution's ultrasound machine. The cardiac presets available on most equipment may be activated to optimize cardiac images. Doppler capability may be helpful in certain extended cardiac CUS indications but is not routinely used for the primary resuscitative TEE indications.[4]

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. The TEE probe requires high level disinfection as it is in contact with mucous membranes. Cleaning of the TEE probe should follow similar protocols for the disinfection of other TEE probes within the hospital.[4]

References

1. Huis In't Veld MA, Allison MG, Bostick DS, Fisher KR, Goloubeva OG, Witting MD, Winters ME. Ultrasound use during cardiopulmonary resuscitation is associated with delays in chest compressions. *Resuscitation*. 2017;119:95-8.

2. Fair J 3rd, Mallin MP, Adler A, Ockerse P, Steenblik J, Tonna J, et al. Transesophageal echocardiography during cardiopulmonary resuscitation is associated with shorter compression pauses compared with transthoracic echocardiography. *Ann Emerg Med.* 2019;73:610-6.
3. Teran F, Prats MI, Nelson BP, Kessler R, Blaivas M, Peberdy MA, et al. Focused transesophageal echocardiography during cardiac arrest resuscitation: JACC review topic of the week. *J Am Coll Cardiol*. 2020;76(6):745-4.
4. American College of Emergency Physicians. Guidelines for the use of transesophageal echocardiography (TEE) in the ED for cardiac arrest [policy statement]. Approved April 2017. *Ann Emerg Med*. 2017;70:442-5.
5. Gaspari R, Weekes A, Adhikari S, Noble VE, Nomura JT, Theodoro D, et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. *Resuscitation.* 2016;109:33-9.
6. Blaivas M. Transesophageal echocardiography during cardiopulmonary arrest in the emergency department. *Resuscitation*. 2008;78(2):135-40.
7. Fair J, Mallin M, Mallemat H, Zimmerman J, Arntfield A, Kessler R, et al. Transesophageal echocardiography: guidelines for point-of-care applications in cardiac arrest resuscitation. *Ann Emerg Med*. 2018;71(2):201-7.
8. Shin J, Rhee JE, Kim K. Is the internipple line the correct hand position for effective chest compression in adult cardiopulmonary resuscitation? *Resuscitation*. 2017;75:305-10.
9. Lerner RP, Haaland A, Lin J. Temporary transvenous pacer placement under transesophageal echocardiogram guidance in the emergency department. *Am J Emerg Med*. 2020;38(5):1044.e3-1044.e4
10. Fair J, Tonna J, Galovic B, Youngquist S, McKellar SH, Mallin M. Emergency physician-performed transesophageal echocardiography for extracorporeal life support vascular cannula placement. *Am J Emerg Med*. 2016;34(8):1637-9.

Trauma

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners who are performing emergency ultrasound studies of the torso of the injured patient, commonly referred to as the Focused Assessment by Sonography in Trauma (FAST) exam.
The FAST exam is used to evaluate the peritoneal, pericardial, or pleural spaces in anatomically dependent areas by combining several separate focused ultrasound examinations of the chest, heart, and abdomen. It is performed as an integral component of trauma resuscitation. It is a clinically focused examination, which, in conjunction with historical and laboratory information, provides additional data for decision-making in trauma patients. While other tests may provide information that is more detailed than the FAST exam, have greater anatomic specificity, or identify alternative diagnoses, the FAST exam is non-invasive, is rapidly deployed, and does not entail removal of the patient from the resuscitation area. Further, FAST avoids the delays, costs, specialized technical personnel, the administration of contrast agents, and radiation associated with other imaging modalities. These advantages make the FAST a valuable addition to available diagnostic resources in the care of patients with acute thoracic and abdominal trauma.

The FAST examination is indicated for patients presenting with acute trauma to the chest or abdomen. It can be useful in both blunt and penetrating mechanisms and holds utility for patients that are hemodynamically stable or unstable. The incorporation of the FAST exam in the setting of hemodynamically unstable blunt trauma patients has been shown to reduce the time to operative disposition, decrease computed tomography (CT) utilization and overall costs associated with trauma

care.[1] While the test characteristics improve when performed in hypotensive patients, a positive FAST exam has been shown to be a better predictor of need for critical intervention in stable patients than other non-CT parameters such as vital sign trends, injury severity score, clinical exam.[2,3] The FAST exam is well suited to mass casualty situations where it can be used to rapidly triage multiple victims. It can be performed on the patient with spinal immobilization. Additionally, portable devices can be used in remote or difficult clinical situations such as aeromedical transport, wilderness rescue, expeditions, battlefield settings, and space flight.[4] Finally, serial FAST exams can be performed without the risk of radiation or poor diagnostics (such as the physical exam in this scenario). CUS (clinical ultrasound) can lead to earlier interventions, can expedite appropriate management and appropriate allocation of resources. These advantages make it a valuable resource in the care of trauma patients.

The utility of the FAST for pediatric patients is less well established than for adults. While its specificity has been reported to be as high as 96%, the sensitivity in pediatric patients is only 52%, making it less useful in the initial evaluation of pediatric trauma patients.[5] In a randomized clinical trial of hemodynamically stable children with blunt torso trauma, FAST was found to have no impact on clinical outcomes, resource utilization, emergency department (ED) length of stay, and missed intra-abdominal injuries.[6] As such, it is less commonly deployed in pediatric patients.[7]

2. Indications/Limitations

a. Primary indications
   To rapidly evaluate the torso for evidence of traumatic free fluid in the peritoneal, pericardial, and pleural cavities.
b. Secondary indications
   i. Evaluation of solid organ injury
   ii. Triage of multiple or mass casualties
c. Contraindications
   i. There are no absolute contraindications to the FAST exam, although providers should not let performance of the FAST delay other necessary procedures.
   ii. There may be relative contraindications based on specific features of the patient's clinical situation (eg, extensive abdominal or chest wall trauma).
   iii. The need for immediate laparotomy is often considered a contraindication to FAST; however, even in this circumstance, evaluation for pericardial tamponade and pneumothorax may be indicated prior before transfer to the operating room.
d. Limitations
   i. The FAST is a single component of the overall and ongoing resuscitation. Since it is a focused examination, FAST does not identify all abnormalities resulting from truncal trauma. Like other tests, it does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. If the findings of the FAST are equivocal, repeat evaluation and additional diagnostic testing may be indicated.
   ii. FAST in trauma may be technically limited by:
      1. Bowel gas
      2. Obesity
      3. Subcutaneous emphysema
   iii. FAST is likely to be less accurate in the following settings:
      1. Pediatric patients
      2. Patients with other reasons for free fluid such as physiologic pelvic free fluid, physiologic pericardial fluid, ascites, prior diagnostic peritoneal lavage, or ruptured ovarian cyst.
e. Pitfalls

i. Studies show that peritoneal free fluid is not identified by FAST until 100-500 ml is present, and this varies depending on patient positioning and provider experience. Thus, a negative exam does not preclude the presence of small amounts of free fluid.
ii. Some injuries may not give rise to free fluid and may therefore easily be missed by the FAST. These include contained solid organ injuries, mesenteric vascular injuries, hollow viscus injuries, and diaphragmatic injuries.
iii. Non-traumatic peritoneal, pleural or pericardial fluid collections may be mistakenly ascribed to trauma.
iv. FAST does not reliably identify solid organ injuries.
v. FAST does not reliably identify retroperitoneal hemorrhage.
vi. Blood clots form rapidly in the peritoneum. Clotted blood has sonographic qualities similar to soft tissue and may be overlooked.
vii. Perinephric fat may be mistaken for hemoperitoneum. This is known as the double line sign where an operator visualizes hypoechoic fat between echogenic fascial planes.
viii. Fluid in the stomach or bowel may be mistaken for hemoperitoneum.
ix. Small hemothoraces may be missed in the supine position.
x. In the evaluation of the pericardium, epicardial fat pads, pericardial cysts, and the descending aorta have been mistaken for free fluid.
xi. Patients with peritoneal or pleural adhesions with significant hemorrhage may not develop free fluid in expected locations.
xii. In the suprapubic view, posterior acoustic enhancement caused by the bladder can result in pelvic free fluid being overlooked. Gain settings should be adjusted accordingly.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

The FAST exam provides information that is the basis of immediate decisions about further evaluation, management, and therapeutic interventions. Because of its direct bearing on patient care, the rendering of a diagnosis via the FAST exam represents the practice of medicine, and therefore is the responsibility of the treating physician.

Physicians of a variety of medical specialties may perform the FAST examination. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute traumatic injury. Because this is an important part of clinical care, the results of the FAST should be documented and reported in the medical record.

4. Specifications for Individual Examinations

a. General principles

The FAST exam is performed simultaneously with other aspects of resuscitation and should not delay the performance of other time critical interventions or procedures. The transducer is placed systematically in four general regions with known “windows” to the peritoneum, pericardium and pleural spaces for detection of fluid in potential spaces where pathological collections of free fluid are known to collect. The four windows are the right upper quadrant, left upper quadrant, pelvic, and subxiphoid. Within these windows there are views that should be systematically assessed for free fluid or clotted blood. To obtain these views the transducer is manipulated with rocking, fanning, rotating and sliding to allow for real-time imaging through all tissue planes. In the section below, the FAST scanning technique is described. These are general guidelines however there are significant anatomical differences across patients and the sonologist may need to adjust their scanning based on what is seen on the viewing screen. Images should be retained for purposes of documentation, quality assurance, and teaching.

b. Scanning technique

i. Image order - The order in which the regions are examined may be determined by clinical factors such as the mechanism of injury or external evidence of trauma. As the right upper quadrant window is most likely to be positive for intra-abdominal free fluid, many practitioners start with this view in patients with blunt trauma. From there, the remaining order of the views is variable with some providers preferring to complete all intra-abdominal views together to help minimize changes to the machine settings. Conversely, in patients suffering penetrating trauma, one of the most immediately fatal pathologies is pericardial tamponade. Therefore, it is generally recommended to start the FAST in the subxiphoid region to evaluate for a pericardial effusion in this scenario. For an extended or E-FAST the bilateral pleura are examined for the presence of pneumothorax.

ii. Imaging windows/views

1. The right upper quadrant window. This is also known as the perihepatic window, Morison's pouch window, or right upper quadrant window. Four potential spaces for the accumulation of free fluid are examined in this region: the pleural space, the subphrenic space, the hepatorenal space (Morison's pouch), the inferior aspect of the liver, and the inferior pole of the kidney, which is a continuation of the right paracolic gutter.

   The probe is placed on the right flank at the anterior-axillary line with the indicator to the patient's head. In order to minimize rib shadowing, the transducer should be placed in an intercostal space, with the long axis of the probe in a parallel plane with the ribs (about 45 degrees counterclockwise from the long axis of the patient's body). By sliding the probe superiorly, the right pleural and subphrenic spaces may be examined for free fluid. Sliding inferiorly allows visualization of Morison's pouch. The operator should fan through the space anteriorly and posteriorly to fully visualize any areas of free fluid. Small amounts of free fluid tend to collect around the caudal tip of the liver, so this is an important component of the right upper quadrant evaluation and may require sliding the probe inferiorly from Morison's pouch. Continuing to slide inferiorly and may show the inferior pole of the right kidney. In many patients, bowel gas is interposed between the liver and the inferior pole of the kidney, necessitating a more posterior approach to visualize this space. If rib shadowing prohibits visualization of these spaces, the probe can be placed in a subcostal location in the mid-clavicular line and rocked to visualize the more cranial spaces. Cooperative patients may facilitate this by being asked to "take a deep breath and hold" while the four potential spaces are examined.

   Abnormal fluid collections are visualized as anechoic or hypoechoic collections. Free fluid typically assumes a spiculated appearance as it accumulates between rounded anatomic structures, making this a useful marker to distinguish free fluid from other anatomic fluid collections (eg, bowel, the gallbladder, renal or liver cysts). Gain settings should be adjusted so that the diaphragm and renal sinus fat appear white and known hypoechoic structures (such as the inferior vena cava, gallbladder, and renal vein) appear black.

2. Left upper quadrant window. In this window, also known as the perisplenic or left upper quadrant window, four potential spaces are sonographically explored. These four spaces are: the pleural space, the subphrenic space, the splenorenal space, and the inferior pole of the left kidney, which is a continuation of the left paracolic gutter. The spleen can be a useful sonographic window, however being smaller, it provides a more limited window than the liver on the right. The optimal left upper quadrant window is routinely obtained more posteriorly and superiorly than the right upper quadrant window.

In order to avoid the gas-filled splenic flexure and descending colon, it is usually necessary to place the probe on the posterior axillary line or even more posteriorly. As is the case on the right side, the probe indicator, by convention, is always directed toward the patient's head and then rotated approximately 45 degrees to be parallel with ribs. Sliding or rocking superiorly allows visualization of the left pleural space. As on the right, the pleural spaces are investigated for evidence of hemothorax by looking for anechoic or hypoechoic collections above the diaphragm. To visualize the inferior pole of the left kidney and the superior extent of the left paracolic gutter, it is usually necessary to slide the probe in a caudal direction.

In each rib space, the probe is systematically swept through all planes in a search for free fluid. The operator should be aware that the stomach will be seen anteriorly to the splenorenal space and can be confused with free fluid, so attention to appropriate positioning of the probe is important. Isolated free fluid in the left upper quadrant is rare and will most likely be found in the subdiaphragmatic space.[8]

3. Pelvic. This view, also known as the suprapubic window, evaluates the rectovesicular space in a male and rectouterine (pouch of Douglas) space in a female. The probe is placed in the transverse plane immediately cephalad to the pubic bone. This maximizes the sonographic window afforded by the bladder. The probe is fanned from the inferior aspect of the bladder to the dome of the bladder through all tissue planes. The probe is then rotated 90 degrees clockwise into the sagittal plane for visualization of the space in an orthogonal plane. Far-field gain settings usually need to be decreased in this view to account for the posterior acoustic enhancement caused by the fluid-filled bladder.

   A full bladder is ideal to visualize the potential spaces in the pelvis, but adequate views can often be obtained with a partly filled bladder. When the bladder is empty, such as in the presence of a Foley catheter, anechoic or hypoechoic free fluid may still be seen, however it is less reliable in ruling out the presence of smaller amounts of free fluid.

4. The pericardial window. To examine the heart and pericardial sac (commonly approached from the subcostal area), the liver is used as a sonographic window. The heart lies immediately behind the sternum, so it is often necessary to apply significant pressure and lower the angle of the probe until it is almost flat against the abdomen to obtain an adequate image. In a cooperative and stable patient, having them take a deep breath and hold may bring the heart closer to the transducer, and flexing at the knees may release the abdominal musculature. The potential space of the pericardial sac is examined for fluid both inferiorly (between the diaphragmatic surface and the inferior myocardium) and posteriorly by fanning anteriorly and posteriorly through the space.

   In some patients, the gastric bubble can inhibit this view. In that case, it may be beneficial to slide slightly to the patient's right and use a leftward rock to help maneuver around gas in the stomach. At times, a subxiphoid view is not possible due to anterior abdominal trauma or body habitus. In this case, other routinely used cardiac windows such as the parasternal or apical four-chamber views may be used. These are described in the "Cardiac" criteria.

5. Anterior pleural (Bilateral). In normal lung, the visceral and parietal pleura are intimately apposed, and slide against one another during respiration. Absence of identifiable pleural sliding is suggestive of separation of the parietal–visceral pleural interface by interposed gas indicating a pneumothorax. In the supine position, the anterior pleura are examined

by placing the probe in a sagittal plane in the midclavicular line at the 3rd to 4th intercostal space. This is the most anterior location on the chest where air within a pneumothorax would typically accumulate in a supine patient. It is necessary to adjust frequency, depth, focus and gain settings to optimally image these superficial structures. The presence of lung sliding, b-lines/z-lines, or a lung pulse rules out pneumothorax at that location under the probe. Lack of plural sliding may be secondary to a pneumothorax, however apnea, mainstem intubation, and adhesion of the pleural layers will also result in lack of movement. M-mode can be used to aid in visualization of lung sliding bilaterally. This exam is discussed in more detail in the "Lung and Pleura" criteria.

iii. Other considerations
Trendelenburg position may increase the sensitivity of the ultrasound exam for abnormal fluid in the right upper quadrant and the sitting positing or reverse Trendelenburg can increase the sensitivity for pelvic free fluid. Serial FAST exams may be performed in response to changes in the patient's condition, to check for the development of previously undetectable volumes of free fluid, or for purposes of ongoing monitoring, as indicated clinically. Emerging research indicates some utility in select populations for the use of contrast-enhanced ultrasound to aid in the management of acutely injured patients.

5. Documentation
In performing FAST exams, images are interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Such interpretations should be documented in the medical record. Documentation should include the indication for the procedure, a description of the organs or structures identified, and an interpretation of the findings. When possible, images should be stored as a part of the medical record and done so in accordance with facility policy requirements.

6. Equipment Specifications
Generally, a curvilinear abdominal or phased-array ultrasound probe at frequencies of 2.0-5.0 MHz with a mean of 3.5 MHz will be used for an adult and 5.0 MHz for children and smaller adults. A small footprint may facilitate scanning between the ribs while a depth of field of up to 25 cm may be required in order to adequately visualize deeper structures in large patients. A high-frequency linear probe is optimal for visualizing the anterior pleural line in most patients; however, a phased array or curvilinear transducer can be used for patients with large habitus or if a linear transducer is not available.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education
Policies and procedures related to quality, safety, infection control, and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Melniker LA, Leibner E, McKenney MG, Lopez P, Briggs WM, Mancuso CA. Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: the first sonography outcomes assessment program trial. *Ann Emerg Med*. 2006;48:227-35.
2. Dammers D, El Moumni M, Hoogland II, Veeger N, Ter Avest E. Should we perform a FAST exam in haemodynamically stable patients presenting after blunt abdominal injury: a retrospective cohort study. *Scand J Trauma Resusc Emerg Med*. 2017;25(1):1.

3. Deunk J, Brink M, Dekker HM, et al. Predictors for the selection of patients for abdominal CT after blunt trauma: a proposal for a diagnostic algorithm. *Ann Surg*. 2010;251:512-20.
4. Hu H, He Y, Zhang S, Cao Y. Streamlined focused assessment with sonography for mass casualty prehospital triage of blunt torso trauma patients. *Am J Emerg Med*. 2014;32:803-6.
5. Fox JC, Boysen M, Gharahbaghian L, et al. Test characteristics of focused assessment of sonography for trauma for clinically significant abdominal free fluid in pediatric blunt abdominal trauma. *Acad Emerg Med*. 2011;18:477-82.
6. Holmes JF, Kelley KM, Wootton-Gorges SL, et al. Effect of abdominal ultrasound on clinical care, outcomes, and resource use among children with blunt torso trauma: A randomized clinical trial. *JAMA*. 2017;317:2290-6.
7. Menaker J, Blumberg S, Wisner DH, et al. Use of the focused assessment with sonography for trauma (FAST) examination and its impact on abdominal computed tomography use in hemodynamically stable children with blunt torso trauma. *J Trauma Acute Care Surg*. 2014;77:427-32.
8. O'Brien KM, Stolz LA, Amini R, Gross A, Stolz U, Adhikari S. Focused assessment with sonography for trauma examination: Reexamining the importance of the left upper quadrant view. *J Ultrasound Med*. 2015;34:1429-34.

Ultrasound-Guided Procedures

1. Introduction

The American College of Emergency Physicians (ACEP) has developed criteria for clinicians utilizing emergency ultrasound (EUS) for procedural accuracy.

The use of EUS has been shown to improve accuracy and proficiency of emergent procedures. Real-time sonographic visualization of anatomical structures allows for improved first pass success, reduction of adverse events, and improved provider confidence on technically difficult or high-risk patients. For example, EUS can determine patency of vascular structures thereby improving the success rate of both central and peripheral venous catheter placements while also reducing complication rates. The Agency for Healthcare Research and Quality highlighted ultrasound-guided central venous catheter placement as a key intervention to reduce adverse outcomes.

Additional procedural applications for ultrasound include guidance for incision and drainage of abscess, aspiration of body fluid collection, confirming fracture or joint reduction, confirmation of endotracheal tube placement, regional anesthesia, arthrocentesis, and lumbar puncture.

2. Indications/Limitations

a. Vascular access
   i. Identify central venous structures, their relative location to important anatomical structures and their patency in facilitating placement of central venous catheters.
   ii. Identify peripheral venous structures, their relative location to important anatomical structures and patency in facilitating placement of peripheral venous access.
   iii. Identify arterial structures, their relative location and flow characteristics in facilitating placement of arterial lines.
b. Evaluation and drainage of abscess
   i. Soft tissue abscess
   ii. Peritonsillar abscess
c. Evaluation and aspiration of body fluid
   i. Pericardial effusion (pericardiocentesis)
   ii. Pleural effusion (thoracentesis)
   iii. Peritoneal fluid (paracentesis)

iv. Joint effusion (arthrocentesis)
v. Cerebrospinal fluid (lumbar puncture)
vi. Urinary retention (bladder aspiration)
vii. Evaluation for soft tissue foreign bodies
viii. Identify fracture and/or confirm reduction
ix. Joint, bursa, and tendon injections
x. Regional anesthesia for multimodal analgesia
xi. Evaluation of pacemaker placement and capture
xii. Confirm endotracheal tube placement

d. Limitations
   i. Procedural ultrasound is an adjunct to care and has inherent limitations. Procedural ultrasound should be interpreted and utilized in the context of the entire clinical picture.
   ii. Procedural ultrasound may be technically limited by:
      1. Obese habitus
      2. Subcutaneous air
      3. Anomalous anatomy/prior surgical changes
      4. Poor imaging from the operator
e. Pitfalls
   i. The operator must be proficient with needle localization and its associated artifact before proceeding with any procedure. The out-of-plane approach allows only a cross section of the needle to be visualized and may lead to errors in needle tip placement. The in-plane approach allows the operator to trace the entire path and angle of the needle from the entry site at the skin and is preferred when anatomically possible. Heel-toe technique, gel stand-off, beam steering and using echogenic needles can be utilized to improve needle visualization.
   ii. It is important to identify a vessel by multiple means before attempting cannulation. The difference between veins and arteries can be determined by compressibility, shape, sonographic appearance (arteries tend to be circular in transverse view with muscular walls), and flow dynamics using Doppler ultrasound.
   iii. Abnormal structures should be compared to the unaffected contralateral side if possible. If uncertainty about the sonographic appearance of a structure persists, other imaging modalities should be investigated.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Physicians of a variety of medical specialties may perform procedural ultrasound. Training should be in accordance with specialty or organization specific guidelines.

4. Technical Recommendations for Each Procedure

a. Prior to performing the procedure, a pre-scan of the relevant anatomy in two orthogonal planes should be performed.
b. Acquire and use an appropriate sterility level probe cover.
c. Prep and clean the skin prior to initiating the procedure
d. When appropriate, employ standard sterile techniques to diminish the risk of infection.
e. The probe should be initially placed at the primary window and then be fanned, rocked and rotated to allow for real-time imaging of the area(s) involved. Interpretation should be done at the bedside immediately with performance of the real-time examination.
f. Ultrasound guidance or ultrasound-assisted procedures can be performed using either of two accepted techniques:
   i. Ultrasound-assisted: Anatomic structures are identified, and an insertion position is identified with ultrasound. The procedure is carried out without the use of real time ultrasound guidance (“mark&stick”).

ii. Ultrasound-guided: The ultrasound transducer is placed in a covering and the key components of the procedure are performed with simultaneous ultrasound visualization during the procedure (eg, using ultrasound to visualize a needle entering a vessel)

5. Procedural Ultrasound Examinations

a. Vascular access
   i. Central venous cannulation
   ii. Peripheral venous cannulation
   iii. Arterial cannulation
b. Incision and drainage of abscess
   i. Soft tissue abscess drainage
   ii. Peritonsillar abscess drainage
c. Body fluid aspiration
   i. Pericardiocentesis
   ii. Thoracentesis
   iii. Paracentesis
   iv. Arthrocentesis
   v. Lumbar puncture
   vi. Bladder aspiration/suprapubic catheter placement
d. Soft tissue foreign body identification
e. Confirmation of joint/fracture reduction
f. Joint, bursa, and tendon injections
g. Regional anesthesia
h. Evaluate for pacemaker placement and capture
i. Endotracheal tube confirmation

6. Documentation

a. All ultrasound-guided or assisted procedures should be documented in a standard manner to include:[1]
   i. Indication for the procedure
   ii. Description of the organs or structures identified
   iii. Interpretation of the findings
   iv. Complication(s) if any
b. Images should be stored as a part of the medical record and in accordance with facility policy requirements. Given the often emergent nature of such ultrasound examinations, the timely delivery of care should not be delayed for image archival.

7. Equipment Specifications

Multiple transducers can be used for procedural ultrasound. High frequency (7.0-12.0 MHz) linear array transducers have superior resolution for superficial and vascular structures. Curvilinear, low frequency transducers can be used to assess deeper structures such as when performing certain joint aspirations or nerve blocks. Microconvex endoluminal probes can be used to identify abscess formation in areas such as the oropharynx. Portable and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

8. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines. In 2021 an intersocietal position statement on the disinfection of ultrasound transducers was published. If contamination of covered transcutaneous transducer with blood or other bodily fluids occurs, it can be eliminated with low-level disinfectants

that are effective against mycobacteria and bloodborne pathogens (including hepatitis B virus, hepatitis C virus, and HIV.[2]

References

1. AIUM practice guideline for documentation of an ultrasound exam. *J Ultrasound Med*. 2014;33(6):1098-102.
2. Disinfection of ultrasound transducers used for percutaneous procedures: Intersocietal position statement. *J Ultrasound Med.* 2021;40(5):895-7.

Venous Thrombosis

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist practitioners performing clinical ultrasound studies (CUS) of the lower extremity venous system in the evaluation of venous thrombosis.

Lower extremity venous CUS differs in two fundamental aspects from the "Duplex" evaluation performed in a vascular laboratory. First, its anatomic focus is limited to specific regions of the proximal deep venous system whereas, in complete examinations, the entire course of the vein in question is scanned. Second, its sonographic technique consists primarily of real-time, dynamic evaluation of venous compressibility versus the duplex ultrasound which also involves Doppler evaluation (color flow and spectral Doppler waveform analysis). This approach to lower extremity proximal venous CUS is often referred to as focused or limited compression ultrasonography. Since B-mode (gray-scale) equipment is widely available, and because substantial scientific evidence supports the use of focused/limited compression ultrasonography, this guideline is focused on the evaluation of proximal lower extremity DVT utilizing this technique. However, emergency physicians today may have access to equipment with Doppler capabilities and are experienced in its use. These individuals may augment their examinations with this technology.

Lower extremity venous CUS is performed and interpreted in the context of the entire clinical picture. It is a clinically directed examination, which, in conjunction with historical, physical examination and laboratory information, provides additional data for clinical decision-making. It attempts to answer a specific question about an individual patient's condition. CUS of the lower extremities does not identify all abnormalities or diseases of the deep venous system. If the findings of lower extremity venous CUS exam are equivocal, further imaging or testing may be necessary.

2. Indications/Limitations

a. Primary
   i. Evaluation for acute proximal DVT in the lower extremities.
b. Extended
   i. Chronic DVT
   ii. Distal DVT
   iii. Superficial venous thrombosis
   iv. Diagnosis of other causes of lower extremity pain and swelling under consideration in the evaluation of DVT such as cellulitis, abscess, muscle hematoma, lymphadenitis, aneurysm, fasciitis, and Baker's cyst
   v. Upper extremity venous thrombosis
c. Contraindications

i. Known, acute proximal DVT. If an ultrasound examination would not have any bearing on clinical decision-making, it should not be performed.
ii. Other contraindications are relative, based on specific features of the patient's clinical condition.

d. Limitations
   i. CUS of the lower extremity deep venous system is a single component of the overall and ongoing clinical evaluation. Since it is a focused examination CUS does not identify all abnormalities or diseases of the lower extremity veins. CUS, like other tests, does not replace clinical judgment and should be interpreted in the context of the entire clinical picture. If the findings of the CUS are equivocal, additional diagnostic testing may be indicated.
   ii. A prior history of DVT may limit the utility of venous CUS. The chronic effects of DVT are highly variable in extent, location, timing, and morphology. A completely normal venous CUS exam is likely to exclude both acute and chronic DVT. However, the interpretation of abnormal findings in patients with a history of prior DVT may be outside the scope of a focused lower extremity venous CUS examination.
   iii. Examination can be limited by:
      1. Obesity
      2. Local factors such as edema, tenderness, sores, open wounds, or injuries
      3. The patient's ability to cooperate with the exam
      4. Previous vascular surgery altering anatomy
      5. Anatomical variants (duplicated vessels, etc.)

e. Pitfalls
   i. A non-compressible vein may be mistaken for an artery, leading to a false negative result.
   ii. An artery may be mistaken for a non-compressible vein, leading to a false positive result.
   iii. Challenging patient habitus (obesity, contraction, extremity edema) may limit exam quality.
   iv. Large superficial veins may be mistaken for deep veins, particularly in patients with DVT causing distension of collateral superficial veins. This can lead to both false positive and false negative results.
   v. Acute thrombus is frequently isoechoic to unclotted blood and failure to visualize echogenic clot should not be used to eliminate the possibility of DVT.
   vi. Failure to recognize a partially occlusive clot.
   vii. Inguinal lymphadenopathy may be mistaken for a non-compressible common femoral vein.
   viii. A Baker's cyst can be mistaken as a non-compressible vein.
   ix. When the limited CUS is negative for DVT failure to inform a patient that repeat venous evaluation in 5-7 days is recommended to assess for proximal propagation of a distal DVT.
   x. Failure to consider the possibility of iliac or inferior vena cava obstruction as a cause for lower extremity pain or swelling. While Doppler techniques may identify the presence of these conditions, they may be beyond the usual scope of the focused CUS exam.
   xi. A negative scan for a lower extremity DVT does not exclude the presence of proximal venous clot or pulmonary embolism.
   xii. Not recognizing that the superficial femoral vein is part of the deep venous system. This sometimes confusing terminology has resulted in some authorities referring to the superficial femoral vein as simply the "femoral vein".
   xiii. Failure to recognize that a proximal greater saphenous vein thrombus, that is seen approaching the common femoral vein, should be treated like a DVT.
   xiv. Failure to identify an isolated thrombus (thrombus distal to the common femoral vein and proximal to the popliteal vein) is a potential pitfall however systematically scanning through the femoral and popliteal zones may reduce this risk.[1] Additionally, patients with normal femoral and popliteal venous compression and a negative d-dimer have equivalent outcomes to patients who undergo whole-leg ultrasonography.[2]
   xv. Slow venous flow may be mistaken for thrombus if compression is not implemented.

xvi. Failure to compress the vein under investigation directly at a right angle can make it difficult to fully compress the vessel resulting in a false positive.

3. Qualifications and Responsibilities of the Clinician Performing the Examination

Limited compression ultrasound of the venous system provides information that is the basis of immediate clinical decision making. Because of its direct bearing on patient care, the rendering of a diagnosis by venous CUS represents the practice of medicine, and therefore is the responsibility of the treating physician.

Due to the potential for life-threatening complications arising from acute DVT, emergent interventions may be mandated by the diagnostic findings of the CUS exam. For this reason, the CUS exam should occur as soon as the clinical decision is made that the patient requires a sonographic evaluation.

Physicians of a variety of medical specialties may perform a lower extremity CUS. Training should be in accordance with specialty or organization specific guidelines. Physicians should render a diagnostic interpretation in a time frame consistent with the management of acute DVT, as outlined above. Because this is an important part of clinical care, the results of the CUS should be documented and reported in the medical record.

4. Specifications for Individual Examinations

a. General. Emergency ultrasound for the diagnosis of DVT assesses compressibility of the lower extremity deep venous system with specific attention directed towards key sections of the common femoral, femoral, deep femoral and popliteal veins. These sections constitute two short regions of the lower extremity: the inguinal region and popliteal fossa.

b. Technique

i. Identification of veins. For the purposes of lower extremity CUS, thrombus in the proximal deep veins of the lower extremity pose a significant risk of pulmonary embolization. These include the common femoral, femoral (formerly superficial femoral vein), deep femoral and popliteal veins. It is important to note that the superficial femoral vein is part of the deep system, not the superficial system as the name suggests. The deep femoral vein is easily overlooked, but like the proximal greater saphenous vein thrombus in this location readily propagates into the common femoral vein. Therefore, it should be assessed for compression as part of the proximal region.

The popliteal vein is formed by the confluence of the anterior and posterior tibial veins with the peroneal vein approximately 4-8 cm distal to the popliteal crease. Continuing proximally, the popliteal vein becomes the femoral vein as it passes through the adductor canal approximately 8-12 cm proximal to the popliteal crease. The femoral vein joins the deep femoral vein to form the common femoral vein approximately 5-7 cm below the inguinal ligament. Prior to passing under the inguinal ligament to form the external iliac vein, the common femoral is joined by the great saphenous vein merging from the medial thigh. In relation to the companion arteries, the popliteal vein is superficial to the artery (more posterior). The common femoral vein lies medial to the artery only in the region immediately inferior to the inguinal ligament. The vein abruptly runs posterior to the artery distal to the inguinal region.

ii. Compression. The sonographic evaluation is performed by compressing the vein (in transverse plane) directly under the transducer while watching for complete apposition of the anterior and posterior walls. If complete compression is not attained with sufficient pressure to cause arterial deformation, obstructing thrombus is likely to be present.

iii. Patient positioning. The patient should be fully undressed from the waist down (though briefs may be acceptable) and not performed in the standing position. To facilitate the identification of the veins and test for compression, venous distention is helpful. This is accomplished by placing the lower extremities in a position of dependency preferably by placing the patient on a flat stretcher in reverse Trendelenberg. If the patient is on a gurney where this is not possible, the patient may be placed in a semi-sitting position. To assess the femoral veins, the patient should externally rotate and abduct 10-30 degrees at the hip into a "frog leg" position and, in obese patients, they may assist the sonologist by lifting their pannus. There are 4 potential positioning options for assessment of the popliteal veins; prone with the ankle propped slightly to pool blood in the scanning zone and release posterior tendons (preferred), lateral decubitus, supine frog-leg position, and sitting with the leg off of the bed.

iv. Transducer. A linear array vascular probe with a frequency of 6 – 10 MHz is ideal. Narrow transducers may make it harder to localize the veins and to apply uniform compression. For larger patients, a lower frequency setting on the linear transducer or even a curvilinear probe will facilitate greater tissue penetration.

v. Real-time scanning technique.
   1. The common femoral vein, saphenous vein inflow, deep femoral and femoral vein region. Coupling gel is applied to the groin and medial thigh for a distance about 10 centimeters distal to the inguinal crease. Filling of the common femoral vein might be augmented by placing a small bolster under the knee resulting in slight (about 10 degrees) hip flexion. The vein and artery may have almost any relationship with one another, although the vein is frequently seen posterior to the artery the farther from the inguinal canal. Distinction of the two vessels may therefore depend on size (the vein is usually larger), shape (the vein is more ovoid) and compressibility (unless thrombosed). Doppler can be utilized to differentiate characteristic arterial or venous signals. Identification of the junction of the greater saphenous and common femoral vein is a useful anatomic landmark. Compressive evaluation of the vessel commences at the highest view obtainable at the inguinal ligament, cephalad to the junction with the greater saphenous vein. Angling superiorly, a short section of the distal common iliac vein might be scanned. Systematic scanning commences cephalad to the junction with the greater saphenous vein, applying compression every centimeter. Compression should be continued through the bifurcation of the common femoral vein into its femoral and deep femoral veins and approximately 2 cm beyond, since branch points are particularly susceptible to thrombosis. If difficulty is encountered in following the common femoral vein to the bifurcation, or in clearly identifying the two branching vessels, techniques to optimize the angle of interrogation should be used. In equivocal cases, comparison with the contralateral side may be helpful and additional imaging may be indicated.
   2. The popliteal vein. Gel is applied from about 12 centimeters superior, to 5 centimeters inferior to the popliteal crease. The vein usually lies superficial to the artery. Both vessels lie superficial to the bony structures, which can be used as landmarks to anticipate the depth of the vessels. If difficulty is encountered in identifying the terminal branches of the popliteal vein, it is possible that the patient has one of the common variants of venous anatomy. In the absence of clear anatomic identification of the termination of the popliteal vein, the major venous structures should be imaged to approximately 7 centimeters below the popliteal crease. In equivocal cases, comparison with the contralateral side may be helpful and additional imaging may be indicated. The popliteal vein should be compressed just into the proximal distal branches to catch any calf thrombus threatening to seed the popliteal vein.

vi. Additional components of the exam.
   1. The deep femoral/femoral veins. As noted previously, these veins are not a primary focus of the standard lower extremity CUS evaluation, other than their proximal portions. In

cases where there is a high suspicion of DVT and an otherwise normal exam of the common femoral and popliteal veins, these vessels may also be evaluated more extensively. A d-dimer may also be used to risk stratify this population.

2. Doppler. Color flow and spectral Doppler assessment may be used to localize and interrogate the vessels, although the use of this technology is beyond the scope of the standard CUS exam.

5. Documentation

In performing venous CUS, imaging is interpreted by the treating physician as they are acquired and are used to guide contemporaneous clinical decisions. Image documentation should be incorporated into the medical record. Documentation should include the indication for the procedure, the views obtained, a description of the structures identified and an interpretation of the findings. Limitations of the exam, and impediments to performing a complete exam should be noted. The written report of the venous CUS should document the presence of complete, partial or absent compressibility in each vein examined. Images should be stored as a part of the medical record and done so in accordance with facility policy requirements. Since the venous CUS exam is a dynamic test with compression repeated multiple times over the lengths of examined vessels, it is not practical in the emergency setting to obtain a still image record of each site evaluated with and without compression. If still image records are obtained for documentation, one or more representative images of each vein, reflecting the key findings with and without compression, should be sufficient.

6. Equipment Specifications

A linear array transducer with a frequency of 6.0 – 10.0 MHz is ideal. Narrower transducers may make it harder to localize the veins and to apply uniform compression. For larger patients, a lower frequency setting on the linear transducer or a curvilinear probe may facilitate greater tissue penetration. Doppler capabilities may be of assistance in localizing and interrogating venous structures. Both hand-held and cart-based ultrasound machines may be used, depending on the location and setting of the examination.

7. Quality Control and Improvements, Safety, Infection Control and Patient Education

Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with specialty or organizational guidelines. Specific institutional guidelines may be developed to correspond with such guidelines.

References

1. Adhikari S, Zeger W, Thom C, Fields JM. Isolated deep venous thrombosis: Implications for 2-point compression ultrasonography of the lower extremity. *Ann Emerg Med*. 2015 Sep;66(3):262-6.
2. Bernardi E, Camporese G, Büller HR, Siragusa S, Imberti D, Berchio A, et al. Erasmus Study Group. Serial 2-point ultrasonography plus D-dimer vs whole-leg color-coded Doppler ultrasonography for diagnosing suspected symptomatic deep vein thrombosis: a randomized controlled trial. *JAMA*. 2008;300(14):1653-9

ACEP Emergency Ultrasound Section Writing Committee and Contributors:

Editors: Nova L Panebianco, MD, FACEP; Javier E. Rosario, MD, FACEP; Penelope Chun Lema, MD, FACEP; Arun Nagdev, MD; Marina Shpilko, DO

Aorta: Javier E. Rosario, MD, FACEP; Mark A. Newberry, DO, FACEP

Cardiac: Judy C. Lin, MD, FACEP; Leily Naraghi, MD, FACEP; Alyssa Nguyen, MD

Female Pelvis: Nova L Panebianco, MD, FACEP; Courtney R. Cassella, MD

Gastrointestinal/Gut: Jennifer Carnell, MD, FACEP; Daniel Mantuani, MD

Kidney and Bladder: Lindsay A. Taylor, MD; Robert Stenberg, MD; Adam Weltler, MD

Lung and Pleura: Creagh Boulger, MD, FACEP; Lauren D. Branditz, MD, FACEP

Ocular: Almaz Dessie, MD; Sirivalli Chamarti, MD

Pediatric Chapters (Appendicitis, Hypertrophic Pyloric Stenosis, Intussusception, Lung, MSK): Matthew P. Kusulas, MD; Samuel Lam, MD, MPH, FACEP; Lorraine K. Ng, MD; Alex Arroyo, MD; Adam B. Sivitz, MD, FACEP; David Teng, MD

Right Upper Quadrant/Hepatobiliary: Michael Gottlieb, MD, FACEP; Amy Marks, MD; Daven V. Patel, MD

Soft Tissue/Musculoskeletal: David P. Bahner, MD, FACEP; Carolyn Martinez, MD; Maggie Kirwin, MD

Resuscitative Transesophageal Echocardiography (TEE): Judy C. Lin, MD, FACEP

Trauma: Lori Ann Stolz, MD, FACEP

Ultrasound-Guided Procedures: Arun Nagdev, MD; Brian D. Johnson, MD, FACEP; Tobias Kummer, MD, FACEP

Venous Thrombosis: Christopher C. Raio, MD, FACEP

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

EMTALA and On-call Responsibility for Emergency Department Patients

Reaffirmed January 2019

Revised June 2013, April 2006 replacing policy statements titled, "Hospital, Medical Staff, and Payer Responsibility for Emergency Department Patients" September 1999; "Medical Staff Responsibility for Emergency Department Patients" September 1997; and "Medical Staff Call Schedule" approved as a Board Motion 1987

The American College of Emergency Physicians (ACEP) believes that:

- Hospitals, medical staff, and payers share an ethical responsibility for the provision of emergency care.
- Hospital emergency departments (EDs) require a reliable on-call system that provides for the availability of medical staff members for consultation and participation in the evaluation and treatment of emergency patients.
- Such on-call systems are vital resources and must be maintained through the joint cooperation of the hospital governing body, administration, and medical staff.

ACEP endorses the following principles:

- Hospitals and their medical staffs must be familiar with and comply with the requirements of the Emergency Medical Treatment and Active Labor Act (EMTALA).
- Hospital bylaws and/or rules and regulations should clearly delineate which providers may participate in the EMTALA-mandated medical screening examination of patients.[1]
- All patients who come to a hospital requesting care must receive a medical screening examination and the necessary treatment to stabilize an emergency medical condition without unnecessary delay and without regard to the patient's ability to pay.[1] Under most circumstances, these services are best provided by emergency physicians.
- A medical screening examination and any necessary stabilizing treatment may require the use of ancillary, consultative, or inpatient services within the capability of the hospital and its medical staff or their delegates [advance practice registered nurse, physician assistant, certified nurse midwife, etc.].[1]
- All hospitals that provide emergency services must maintain a schedule of medical and surgical specialists on-call for the ED in a manner that best meets the needs of the hospital's patients who are receiving services.[1]
- To ensure institutional compliance with the provisions of EMTALA, hospital medical staff bylaws and/or rules, and regulations must delineate the responsibilities of the on-call physician and should specify methods for

monitoring and ensuring compliance.

- On-call physician services must be available within a reasonable time to provide necessary stabilizing treatment[1] and without regard to the patient's ability to pay.
- If a hospital lacks the medical staff resources to provide on-call coverage for a given specialty, the hospital must have a plan that specifies how such referrals should be managed.[1]
- Follow-up care should be arranged by referral for all patients who require such care.
- Physicians who choose to assume direct on-site emergency care responsibility for their patients must be physically present in the ED and must be members of the medical staff, privileged to provide such care.
- When feasible, requests for consultative services should be made in accordance with the patient's preferences and/or health plan.
- Physician services (including medically necessary post-stabilization care), when provided in response to the request for emergency care, should be recognized as emergency services for reimbursement purposes and should be compensated in a fair and equitable manner.
- Transfer of patient care responsibilities between physicians must be orderly, clearly defined, and properly documented. The mechanism for such transfers and for resolution of disagreements between physicians should be clearly defined in medical staff rules and regulations.
- All hospitals with specialized capabilities have a responsibility to accept transfer of patients when such transfer is necessary to stabilize an emergency medical condition.[1] Hospitals should have a means to ensure medical staff responsibility for transfer acceptance and provision of specialized care.

Reference

[1] The Emergency Medical Treatment and Active Labor Act, as established under the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 (42 USC 1395 dd), Section 9121, as amended by the Omnibus Budget Reconciliation Acts (OBRA) of 1987, 1989, and 1990. Rules and regulations published Federal Register June 22, 1994;59:32086-32127.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Ensuring Emergency Department Patient Access to Appropriate Pain Treatment

Revised February 2018 with current title

Originally approved October 2012 titled "Ensuring Emergency Department Patient Access to Adequate and Appropriate Pain Treatment" (CR17)

The American College of Emergency Physicians (ACEP):

- Supports ACEP Chapters having the autonomy to establish and coordinate evidence-based pain management guidelines that promote access to appropriate pain control within physician clinical judgment;
- Supports limiting the initial prescription of an opioid to no more than a 7-day supply, unless in the judgment of the treating physician a longer duration is indicated and rationale is documented;
- Supports widespread availability of opioid-related Continuing Medical Education (CME) but opposes state mandates for compulsory CME on pain or opioids;
- Supports effective, interoperable and voluntary state prescription drug monitoring programs (PDMPs) that push prescription data to emergency department providers, rather than requiring them to separately sign into and pull the data from the PDMP, and opposes legal mandates requiring access of the PDMP prior to prescribing or administering a controlled substance when the prescription does not exceed a 7-day supply; and,
- Supports exercising caution prior to prescribing an opioid for a patient who is prescribed a benzodiazepine and counseling the patient accordingly about the risks associated with concurrent use of opioids and benzodiazepines.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Ethical Issues at the End of Life

Revised April 2020

Reaffirmed April 2014

Revised with current title June 2008

Originally approved titled "Ethical Issues in Emergency Department Care at the End of Life" September 2005

The American College of Emergency Physicians believes that:

- Emergency physicians play an important role in providing care at the end of life (EOL).
- Helping patients and their families achieve greater control over the dying process will improve EOL care by ensuring care is provided in accordance with patients' wishes.
- Advance care planning can help patients formulate and express individual wishes for EOL care and communicate those wishes to their health care providers by means of advance directives (including state approved advance directives such as POLST, MOLST, MOST, DNAR orders, living wills and durable powers of attorney for health care).

To enhance EOL care in the emergency department, the American College of Emergency Physicians believes that emergency physicians should:

- Respect the dying patient's needs for care, comfort, and compassion.
- Communicate promptly and appropriately with patients and their families about EOL care choices.
- Elicit the patient's goals for care before initiating non-life-threatening treatment, recognizing that EOL care includes a broad range of therapeutic and palliative options, including forgoing treatments that may increase distress or are not aligned with the goals of the patient.
- Respect the wishes of dying patients including those expressed in advance directives. This also includes making a reasonable attempt at identifying their specific advance directives.
- Assist surrogates to make EOL care choices for patients who lack decision-making capacity, based on the patient's own preferences, values, and goals.
- Encourage the presence of family and friends at the patient's bedside near the end of life, if desired by the patient.
- Recognize when family distress or goals may not align with the patients' goals.
- Protect the privacy of patients and families near the end of life.
- Promote liaisons with individuals and organizations in order to help patients and families honor EOL cultural and religious traditions.

- Physicians have a responsibility to communicate difficult information in a sensitive way.
- Comply with institutional policies regarding recovery of organs for transplantation.
- Obtain informed consent from surrogates for postmortem procedures.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Ethical Issues of Resuscitation

Revised January 2021, June 2015

Originally approved June 2008 combining "Ethical Issues of Resuscitation" (October 2001) and "Do Not Attempt Resuscitation (DNAR) in the Out-of-Hospital Setting" (September 2003)

The American College of Emergency Physicians supports the following principles.

- Patients who may benefit from resuscitation efforts should have equitable access to such efforts.
- Decisions to attempt resuscitation must take into account the accepted standards of medical care, the safety of the medical personnel, and known patient preferences.

It is appropriate for out-of-hospital providers to honor valid orders to limit life-sustaining interventions at the end of life. Standardized guidelines and protocols should exist in all EMS systems to direct out-of-hospital personnel's resuscitative efforts. Educational information regarding such policies should be disseminated to the community and to out-of-hospital and hospital providers.

Patient goals and preferences for end of life care should be honored by out-of-hospital and hospital providers at the end of life. EMS out-of-hospital order systems should support efforts to provide or forgo these treatments based on available information.

The appropriate surrogate decision-maker, as defined by state law, should be involved in decisions regarding life-sustaining treatments if immediately available. Additional sources of information to guide treatment decisions may come from patient advance directives, family, or primary physicians as time permits. EMS systems should honor state-recognized orders addressing life-sustaining treatments.

If the patient's goals or medical circumstances are unclear, medically appropriate resuscitative measures should be undertaken. It is ethically permissible for treatments, once started, to be withdrawn when additional information becomes available. This information may include the lack of response to treatment or definitive information about the patient's goals for life-sustaining treatments.

Resuscitative efforts may be appropriately not initiated, and non-beneficial treatment may be withdrawn or limited in circumstances such as the lack of immediately available resuscitation resources, or when there is no realistic

likelihood of benefit to the patient based on existing scientific evidence and reasonable medical judgement.

Resuscitative efforts may also be appropriately not initiated, withdrawn, or limited in unsafe situations, such as during a global pandemic, a violent situation, or an environmental disaster, in order to protect staff properly. Facilities should develop protocols to guide alteration of resuscitation practices in these extraordinary circumstances.

When resuscitative efforts are not indicated, emergency physicians should assure appropriate medical and psychosocial care during the dying process.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Ethical Use of Telehealth in Emergency Care

Revised January 2022 with current title

Originally approved June 2016 titled "Ethical Use of Telemedicine in Emergency Care"

Telehealth as related to emergency medical care uses real-time audio or video transmissions to provide information, advice and orders for diagnostic and treatment interventions between a distant site (eg, healthcare facility, ambulance, ship, airplane, rescue location) and an emergency department or its telecommunication hub. Practitioners use telehealth to assess patients and their diagnostic results, monitor ongoing clinical interventions, and interact with the patient's on-site clinicians.

1. ACEP believes that emergency departments using telehealth should make this form of care accessible regardless of race, religion, sexual orientation, location, or ability to pay.

2. ACEP believes that emergency departments and hospitals should ensure that their telehealth systems and practices provide patients with at least the privacy and confidentiality required under federal HIPAA regulations. This includes assuring that their equipment and technology are up-to-date and secure.

3. ACEP believes that telehealth decisions relating to patient care, referrals and transfers should be based on the patient's healthcare needs.

4. ACEP supports the establishment of standards for telehealth practitioners and development of related quality assurance and educational programs to develop the discipline.

5. ACEP supports legislative efforts that would allow for single-state licensing being sufficient for telehealth practice throughout the United States.

6. ACEP believes that telehealth consultations of emergency physicians, nurse practitioners, and physician assistants with patients or their surrogates are subject to the same informed consent and refusal standards as are face-to-face medical encounters.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Evaluation and Treatment of Minors

Reaffirmed January 2021

Revised October 2015

Reaffirmed October 2007

Revised February 2001

Reaffirmed January 1996

Originally approved October 1991

As an adjunct to this policy statement, ACEP prepared a policy resource and education paper (PREP) titled "Evaluation and Treatment of Minors"

The medical screening, examination and treatment of an emergency medical condition of a minor in the emergency department should not be delayed because of consent issues. When clinically, legally, and ethically appropriate, adolescents independently treated in the emergency department should have their confidentiality honored.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Expedited Partner Therapy for Selected Sexually Transmitted Infections

Originally approved April 2022

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "Expedited Partner Therapy for Selected Sexually Transmitted Infections"

The American College of Emergency Physicians (ACEP) supports the use of Expedited Partner Therapy (EPT) for selected sexually transmitted infections (STIs) to address an important public health problem with effective therapy, and further:

- Endorses the use of EPT as an adjunct to care for selected patients with STIs for which the CDC recommends the use of expedited therapy.
- Encourages development of model legislation that removes legal obstacles to EPT, promotes legal clarity where the laws are ambiguous, and provides legal protection for health care professionals who prescribe EPT.
- Supports affordability, accessibility, and insurance coverage of EPT medications for patients and their partners.
- Supports work by state and local health departments and key stakeholders to develop expedited partner therapy protocols.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2020

Expert Witness Cross-Specialty Testimony for Standard of Care

Originally approved June 2020

Expert witness cross-specialty testimony occurs when a physician in one medical specialty provides an expert witness opinion regarding the standard of care in a different medical specialty. Since medical expert witness testimony has the potential to establish standards of care, the American College of Emergency Physicians believes that the standard of care for emergency medicine should only be established and attested to by emergency physicians.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Expert Witness Guidelines for the Specialty of Emergency Medicine

Revised June 2021, June 2015, June 2010, August 2000, and September 1995

Originally approved September 1990

Expert witnesses are asked to render opinions as to assess the requisite standard of care pertaining to emergency physicians in cases of alleged medical malpractice and peer review. Because medical expert witness testimony has demonstrated the potential to establish standards of medical care, and because physician expert witnesses hold themselves out as qualified to render an opinion by virtue of a medical degree, such testimony is considered by the American College of Emergency Physicians (ACEP) to constitute the practice of medicine.

To qualify as an expert witness in the specialty of emergency medicine, a physician shall:

- Be currently licensed in a state, territory, or area constituting legal jurisdiction of the United States as a doctor of medicine or osteopathic medicine;
- Be certified by a recognized certifying body in emergency medicine[1];
- Be in the active clinical practice of emergency medicine for at least three years (exclusive of training) immediately preceding the date of the occurrence giving rise to the case[2]. A physician serving as an expert witness who is not currently engaged in the clinical practice of emergency medicine shall be considered to have met this requirement if he or she was so engaged during the three years immediately preceding the date of the occurrence giving rise to the case.
- Abide by the following guidelines:
  - The expert witness should possess current experience and ongoing knowledge in the area in which he or she is asked to testify.
  - The expert witness should not provide expert medical testimony that is false, misleading, or without medical foundation.[2] The key to this process is a thorough review of available and appropriate medical records and contemporaneous literature concerning the case being examined.
  - A medical expert's opinion should reflect the state of medical knowledge at the time of the event giving rise to the case.

- The expert witness should review the medical facts in a thorough, fair, and objective manner and should not exclude any relevant information to create a view favoring either the plaintiff or the defendant.
- Expert witnesses should be chosen on the basis of their experience in the area in which they are providing testimony, and not on the basis of offices or positions held in medical specialty societies, unless such positions are material to the expertise of the witness.
- An emergency physician should not engage in advertising or solicit employment as an expert witness where such advertising or solicitation contains false or deceptive representations about the physician's qualifications, experience, titles or background.
- The expert witness should be willing to submit the transcripts of depositions and testimony to peer review.
- An expert witness should never accept any compensation arrangement that is contingent on the outcome of litigation.
- Misconduct as an expert, including the provision of false, fraudulent, or misleading testimony, may expose the physician to disciplinary action.[2, 3]
- Be not only familiar with the local state law, regulations, and practice of emergency medicine, but strictly adhere to the state specific definitions of negligence.

References

1. American College of Emergency Physicians. ACEP recognized certifying bodies in emergency medicine **[**policy statement; reaffirmed February 2020]. *Ann Emerg Med.* 2020 Oct;76(4):e101=108.
2. American College of Emergency Physicians. Code of ethics for emergency physicians [policy statement; approved January 2017]. *Ann Emerg Med.* 2017 Jul;70(1):e7-25.
3. American College of Emergency Physicians. Procedures for addressing charges of ethical violations and other misconduct. Revised 2020. American College of Emergency Physicians web site. Accessed July 2021.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

External Cause of Morbidity Codes and Injury Surveillance Data Systems

Revised April 2023, June 2017 with current title, June 2010 titled "E-codes and Injury Surveillance Data Systems"

Reaffirmed September 2003, October 1998

Originally approved September 1990 as Council Resolution CR016 titled "E-Codes"

The American College of Emergency Physicians (ACEP) supports the development of adequate injury data and surveillance systems, including external causes of morbidity codes, Crash Outcomes Data Evaluation System (CODES), and National Violent Death Reporting System (NVDRS) in all 50 states. These injury surveillance data systems are crucial for identifying, monitoring, and evaluating injury prevention strategies locally, regionally, and nationally.

The External Cause of Morbidity (V00-Y99) codes provide vital information for understanding the burden of injuries in the United States. Improving standardized collection of data in centralized morbidity data systems allows for improved data on injury epidemiology and more opportunities for data linkage with systems such as CODES and NVDRS. This information is invaluable for setting priorities and developing, implementing, and evaluating injury prevention and policy efforts.

Injury data and surveillance systems should not produce undue documentation burden on the emergency physician. When feasible, ACEP supports the use of electronic health record (EHR) data extraction via manual or validated automated or artificial intelligence based solutions to generate External Cause of Morbidity codes using existing clinical documentation.

Additionally, ACEP supports:

- Centers for Disease Control and Prevention (CDC) efforts to incorporate data element standards for fully integrated collection and extraction of data from electronic health records.
- Collaboration with other organizations and federal agencies in the development and implementation of guidelines and standards relating to emergency department (ED) External Cause of Morbidity codes completeness, accuracy, and specificity.
- The use of External Cause of Morbidity codes in the development and assessment of evidence-based injury prevention programs and policies. Efforts to develop: a) a central repository to share this data; b) linkages of appropriate additional data sets, including hospital EMR and any system with patient outcome information; and c) a user-friendly query system for ED and hospital discharge data.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Fair Reimbursement When Services Are Mandated

Revised June 2023 with current title, April 2017 titled "Fair Coverage When Services Are Mandated"

Reaffirmed April 2011 and September 2005

Approved June 1999 as policy statement titled "Compensation When Services are Mandated"

Originally approved September 1992 as CR011

Any government agency, legislative body, insurance carrier, third party payer, or any other entity that mandates that a service or product be provided by emergency physicians or other health care professionals should also mandate an adequate source of funding to ensure fair coverage for those services or products. All entities must be compelled to assure that expenses incurred by the unfunded mandates of EMTALA are adequately reimbursed. Based on the growing and relentless burden of unfunded mandates on emergency physicians and emergency departments, the following must be rectified immediately:

1. The lack of sufficient funding for EMTALA care since its inception in 1986.
2. The No Surprises Act, put into effect in January 2022, has regulations unfairly affecting emergency physicians because of their favorability to payers.
3. The lack of inflationary adjustments for Medicare and Medicaid programs over the last 30 years has created EMTALA cost burdens that are disproportionately carried by emergency physicians, rather than the government and payers.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Fair Compensation to Emergency Physicians to Supervise ABEM/AOBEM Board Certified/Eligible Led Teams

Originally approved June 2023

The American College of Emergency Physicians (ACEP) supports that emergency physicians be fairly compensated to supervise American Board of Emergency Medicine (ABEM)/American Osteopathic Board of Emergency Medicine (AOBEM) board certified/eligible physician led teams.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Fair Payment for Emergency Department Services

Revised June 2023,
June 2022,
April 2016

Originally approved
April 2009

Emergency physicians provide emergency medical services without regard for the patient's insurance status or ability to pay, consistent with our mission and EMTALA obligations. Emergency physicians face unique financial challenges in meeting this mission. Emergency physicians play an important role in the health care safety net and continue to provide essential health care services to a disproportionate share of the uninsured and under-insured population in the United States. Fair payment for emergency care services, whether government funded, commercially insured, and/or paid by the patient must be sufficient to preserve the nation's fragile emergency care safety net, and ensure that all patients have continued access to qualified emergency physicians. Federal and state regulatory boards should prohibit the practice of automatic denials and down coding of emergency department claims through the use of restrictive diagnosis lists, non-validated commercial algorithms, leveling policies, and other denial practices.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved August 2022

Family and Medical Leave

Revised August 2022, June 2019 with current title

Reaffirmed April 2012

Revised October 2006, September 1999, April 1994 titled "Family Leave of Absence"

Originally approved June 1990 titled, "Parental Leave of Absence"

To promote the health and well-being of emergency physicians, ACEP endorses the following principles regarding family and medical leave.

- The personal health and integrity of physicians' relationships with their family are essential to physicians' personal and professional well-being. The ability to respond to personal, medical, and family needs promotes work satisfaction and career longevity, which also contributes to higher quality patient care.

- The leaders of physician groups, residency programs, and employers should make these policies easily accessible and should help facilitate the process of utilization without undue delay, stigma, or administrative burden.

- Emergency medicine physician groups, employers, and residency programs should have written policies that support family, medical, and personal leaves of absence. These policies should apply to personal physical and mental illness, parental leave for the birth or adoption of a child, the care of an ill family member, and situations involving the safety or cohesion of the family.

- Such policies should include job security and continued availability of health plan benefits for a reasonable time period, at a minimum 12 weeks. This is the length of time required by the Family Medical Leave Act (FMLA) but should be used as a model for employers not legally bound by the FMLA law as well.

- ACEP supports paid parental and medical leave. Such leave should not expose the physician to fear of any negative professional repercussions nor place undue financial burden on the physician and his or her family. The decision of whether to use paid sick leave, vacation time, supplemental leave/disability, or other forms of leave should be left to the discretion of the physician.

- Flexible work schedules for parents before and after welcoming a new child should be made available whenever possible.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Fictitious Patients

Reaffirmed February 2020, April 2014

Originally approved June 2008

The American College of Emergency Physicians believes that all emergency patients should have access to safe, timely, efficient, and courteous medical care.

ACEP supports creativity in the development of effective measures to evaluate and improve patient care. ACEP also supports innovative approaches to medical education, including approaches that foster empathy toward patients by health care providers.

Some institutions reportedly have used fictitious patients to help evaluate the service aspects of emergency care. Some medical schools have had students pose as patients as part of their training.

ACEP opposes the use of fictitious patients in emergency care units. Deception is unethical and may undermine the trust essential to the relationship between patients and emergency caregivers. Such practices may have unintended negative effects, such as the delays in treatment for other patients, unnecessary administration of medications and improper billing practices.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Financing of Graduate Medical Education in Emergency Medicine

Revised June 2021, June 2018 and October 2012

Reaffirmed September 2005

Originally approved September 1999

Recognizing that significant changes are occurring in the physician workforce and in the financing of graduate medical education (GME), the American College of Emergency Physicians (ACEP) believes that:

- Well-educated and experienced emergency physicians provide the best and most cost-effective emergency health care.
- Emergency medicine residency programs provide the best and only method of training future emergency physicians.
- Emergency medicine residency programs must have adequate, predictable, and stable sources of funding to ensure appropriate training of residency trained emergency medicine specialists.
- Emergency medicine residency programs train physicians to evaluate and respond to individual patient crises and major manmade and natural disasters on a 24-hour basis. All payers and the public directly or indirectly benefit from this service.
- Federal GME funding should be made through a non-discretionary appropriations process. Emergency medicine should have flexibility in the use of these funds in order to train residents to practice in non-urban areas.
- Any government advisory or planning body examining or developing policy relating to GME reform, including financing and workforce issues, should include representation and input from the specialty of emergency medicine.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2019

Firearm Safety and Injury Prevention

Revised October 2019

Approved April 2013 with current title, replacing rescinded policy statement titled "Firearm Injury Prevention"

Revised October 2012, January 2011

Reaffirmed October 2007

Originally approved February 2001 replacing: "Firearm Dealers" (CR 1994), "Firearm Legislation" (CR 1989), "Firearm Possession" (CR 1994), "Firearms-Consumer Product Safety" (CR 1994), "Handgun Ownership" (CR 1993), "Handgun Purchase" (CR 1994), "Handguns" (CR 1985), "Handguns and Handgun Ammunition-Federal Taxes" (CR 1994), "Handguns-Size and Safe Design Requirements" (CR 1995), and Semiautomatic Weapons" (CR 1989)

The American College of Emergency Physicians condemns the current rates of injury and death from firearms in the United States. Firearm injury is a leading cause of death among young Americans, is the most common means of suicide death among all Americans, and has psychological and financial ramifications for victims, their families, and the healthcare system. As emergency physicians, we witness the toll firearm injuries take on our patients each day across the United States. We support the need for funding, research, and protocols to help address this public health issue.

ACEP supports legislative and regulatory efforts that:

- Actively support both private and public funding into firearm safety and injury prevention research;[1-3]
- Protect the duty of physicians to discuss firearm safety with patients;
- Support universal background checks for all firearm transactions, including private sales and transfers;
- Support adequate enforcement of existing laws and support new legislation that prevents high-risk and prohibited individuals from obtaining firearms;
- Restrict the sale and ownership of weapons, munitions, and large-capacity magazines that are designed for military or law enforcement use, and prohibit the sale of after-market modifications that increase the lethality of otherwise legal firearms;
- Support prohibitions on 3-D printing of firearms and their components (so-called "ghost guns" or other technologies that seek to bypass regulations);

ACEP supports public health and health care efforts that:

- Investigate the effect of social determinants of health and other cultural risk factors on patterns of firearm injury (eg, poverty, intimate partner violence, prior exposure to violence, the relationship between communities and law enforcement);
- Support a confidential national firearm injury research registry while encouraging states to establish a uniform approach to tracking and recording firearm-related injuries (eg, homicide, suicide, unintentional, self-defense, intimate partner violence, officer-involved, line-of-duty, etc.);

- Promote access to effective, affordable, and sustainable mental health services for emergency department patients with acute mental illness for whom access to a firearm poses a real risk to life for themselves or others;
- Provide health care providers with information on the most effective ways to counsel patients and families on proper firearm safety, emphasizing evidence-based methods that are shown to reduce intentional and unintentional injuries;[4-6]
- Support research into public policies that may reduce the risk of all types of firearm-related injuries, including risk characteristics that might make a person more likely to engage in violent and/or suicidal behavior;[2,5,6]
- Support community-based and hospital-based programs that would allow early intervention to prevent firearm-related injuries and their long-term consequences.[4,7]

References

1. Kuhls DA, Campbell BT, Burke PA, et al. Survey of American College of Surgeons Committee on trauma members on firearm injury: Consensus and opportunities 2017. *J Trauma Acute Care Surg*. 2017;82(5):877-86. Available at: https://cdn.journals.lww.com/jtrauma/FullText/2017/05000/Survey_of_American_College_of_Surgeons_Committee.7.aspx.
2. Ranney ML, Fletcher J, Alter H, et al. A consensus-driven agenda for emergency medicine firearm injury prevention research. *Ann Emerg Med*. 2017;69(2):227-40. Available at: https://doi.org/10.1016/j.annemergmed.2016.08.454.
3. Stark DE, Shah NH. Funding and publication of research on gun violence and other leading causes of death. *JAMA*. 2017;317(1):84-5. doi:10.1001/jama.2016.16215 Available at: https://jamanetwork.com/journals/jama/fullarticle/2595514.
4. National Academies of Sciences, Engineering, and Medicine. 2019. Health systems interventions to prevent firearm injuries and death: Proceedings of a workshop. Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/25354. Available at http://www.nationalacademies.org/hmd/Reports/2019/health-systems-interventions-prevent-firearm-injuries-death.aspx.
5. Rowhani-Rahbar A, Zatzick D, Wang J, et al. Firearm-related hospitalization and risk for subsequent violent injury, death, or crime perpetration: a cohort study. *Ann Intern Med*. 2015;162(7):492-500. Available at: https://annals.org/aim/fullarticle/2151827/firearm-related-hospitalization-risk-subsequent-violent-injury-death-crime-perpetration.
6. Simonetti JA, Rowhani-Rahbar A. Limiting access to firearms as a suicide prevention strategy among adults: what should clinicians recommend? *JAMA Netw Open*. 2019;2(6):e195400. doi:10.1001/jamanetworkopen.2019.5400. Available at https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2735457.
7. Bulger EM, Kuhls DA, Campbell BT, et al. Proceedings from the Medical Summit on Firearm Injury Prevention: A Public Health Approach to Reduce Death and Disability in the US. 2019. *J Am Coll Surg*. 2019 Oct;229(4):415-30. doi: 10.1016/j.jamcollsurg.2019.05.018.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Food and Drink for Staff in the Emergency Department

Originally approved
April 2020

Understanding that staff may have limited access to proper breaks depending on patient volume and acuity, as well as the importance of hydration and nutrition during a clinician's shift, the American College of Emergency Physicians (ACEP) strongly advocates for organizations to permit and support policies that allow for food and beverages to be kept and ingested by staff members at their workstations in the emergency department (ED).

While food and beverages should be permitted at ED workstations, relevant polices should consider:

- Food and beverages should be stored separately (eg, refrigerators, cupboards) from areas designated for specimen storage and processing. Similarly, specimen handling must be performed at the bedside, in dirty utility rooms, or dedicated areas separate from workstations where food and drink may be consumed.

- Food and beverages should not be consumed in areas dedicated to the storage or administration of medications or specimen collection/ processing.

- Staff must be responsible for handling food and beverages with appropriate care to prevent spills that may damage electronic equipment, sensitive documents, or other materials on the desktops.

- Appropriate hand hygiene must be performed before and after patient encounters or handling of specimens, as well as before and after touching or consuming food or beverage.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Freestanding Emergency Departments

Revised April 2020

Originally approved June 2014

A freestanding emergency department (FSED) is a licensed facility that is structurally separate and distinct from a hospital and provides emergency care. There are two distinct types of FSEDs: a hospital outpatient department (HOPD), also referred to as an off-site hospital-based or satellite emergency department (ED), and independent freestanding emergency centers (IFECs). The number of FSEDs has increased in an ever-changing regulatory and health care environment.

HOPDs are owned and operated by medical centers or hospital systems. By federal regulations, if the medical center or hospital system accepts Medicare or Medicaid payments for emergency services at a HOPD, the HOPD falls under the same rules and regulations of the Centers for Medicare & Medicaid Services (CMS) as the ED of the medical center or hospital and must comply with all CMS Conditions of Participation (CoPs). State licensing rules and regulations governing facilities that do not seek CMS approval for Medicare/Medicaid reimbursement for the technical component of their services are often inconsistent, unclear or non-existent.

IFECs can be owned by any individual or business entity. Some states have created licensing criteria to govern IFECs that closely follow the intent of the Emergency Medical Treatment & Labor Act (EMTALA) and other rules and regulations. Many states do not currently address licensing rules for IFECs. At this time, CMS does not recognize IFECs as EDs. Therefore, CMS does not allow for Medicare or Medicaid payment for the technical component of services provided by IFECs.[1]

The American College of Emergency Physicians (ACEP) believes that any FSED facility that presents itself as an ED, regardless of whether it is a HOPD or an IFEC, should:

- Be available to the public 24 hours a day, seven days a week, and 365 days per year.
- Be staffed by appropriately qualified emergency physicians.
- Have adequate medical and nursing personnel qualified in emergency care to meet the written emergency procedures and needs anticipated by the facility.

- Be staffed at all times by a registered nurse (RN) with a minimum requirement of current certification in advanced cardiac life support and pediatric advanced life support.
- Have policy agreements and procedures in place to provide effective and efficient transfer to a higher level of care if needed (ie, cath labs, surgery, ICU).
- Receive the same level of reimbursement for both the physician and technical component fee as a traditional hospital-based emergency department.

ACEP believes that all FSEDs must follow the intent of the EMTALA statute and that all individuals arriving at a FSED should be provided an appropriate medical screening examination (MSE) by qualified medical personnel including ancillary services, to determine whether or not an emergency exists.

The FSED should provide stabilizing treatment within the capability of the facility and should have a mechanism in place to arrange an appropriate transfer to the definitive care facility, if appropriate, for the patient to receive necessary stabilizing treatment regardless of the patient's ability to pay or method of payment.

FSEDs should have the same standards as hospital based EDs for quality improvement, medical leadership, medical directors, credentialing, and appropriate policies for referrals to primary and specialty physicians for aftercare. Value-based payments should consider the intrinsic differences between FSEDs and hospital-based EDs.

ACEP encourages all states to have regulations regarding FSEDs that are developed in close relationship with the ACEP chapter in the state. ACEP believes that all FSEDs (both HOPDs and IFECs) that adhere to the standards set forth in this policy should be reimbursed by Medicare, Medicaid, and third-party payers.

Reference

1. CMS S&C Memo 08-08, 2008 Requirements for Provider-based Off-campus Emergency Departments and Hospitals that Specialize in the Provision of Emergency Services. January 11, 2008.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Geriatric Emergency Department Guidelines

Reaffirmed January 2019

Approved by The American Geriatrics Society October 2013; by the Emergency Nurses Association January 2014; and by the Society for Academic Emergency Medicine October 2013

Originally approved October 2013

A joint policy statement of the American College of Emergency Physicians, American Geriatric Society, Emergency Nurses Association, and Society for Academic Emergency Medicine

Table of Contents

This document is the product of two years of consensus-based work that included representatives from the American College of Emergency Physicians, The American Geriatrics Society, Emergency Nurses Association, and the Society for Academic Emergency Medicine.

INTRODUCTION

According to the 2010 Census, more than 40 million Americans were over the age of 65, which was "more people than in any previous census." In addition, "between 2000 and 2010, the population 65 years and over increased at a faster rate than the total U.S. population." The census data also demonstrated that the population 85 and older is growing at a rate almost three times the general population. The subsequent increased need for health care for this burgeoning geriatric population represents an unprecedented and overwhelming challenge to the American health care system as a whole and to emergency departments (EDs) specifically.[1-4] Geriatric EDs began appearing in the United States in 2008 and have become increasingly common.[5]

The ED is uniquely positioned to play a role in improving care to the geriatric population.[6] As an ever-increasing access point for medical care, the ED sits at a crossroads between inpatient and outpatient care (Figure 1).[7,8] Specifically, the ED represents 57% of hospital admissions in the United States, of which almost 70% receive a non-surgical diagnosis.[9] The expertise which an ED staff can bring to an encounter with a geriatric patient can meaningfully impact not only a patient's condition, but can also impact the decision to utilize relatively expensive inpatient modalities, or less expensive outpatient treatments.[10, 11] Emergency medicine experts recognize similar challenges around the world.[12] Geriatric ED core principles have been described in the United Kingdom.[13]

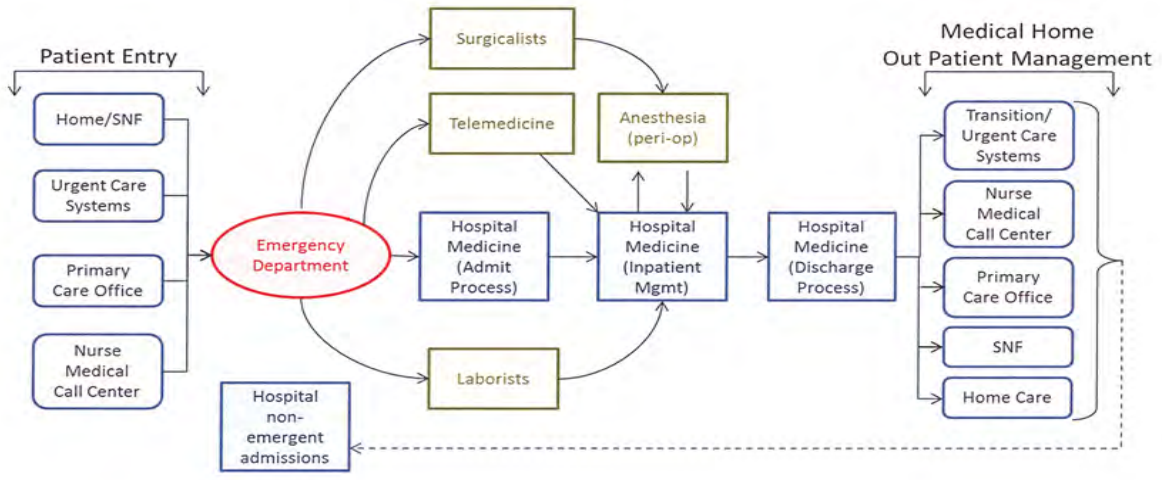


Figure 1. The central role of the ED in geriatric health care in contemporary medicine (reproduced with permission from TeamHealth's Patient Care Continuum Model.)

Furthermore, as the initial site of care for both inpatient and outpatient events, the care provided in the ED has the opportunity to "set the stage" for subsequent care provided. More accurate diagnoses and improved therapeutic measures can not only expedite and improve inpatient care and outcomes, but can effectively guide the allocation of resources towards a patient population that, in general, utilizes significantly more resources per event than younger populations.[9,14] Geriatric ED patients represent 43% of admissions, including 48% admitted to the intensive care unit (ICU).[15, 16] On average, the geriatric patient has an ED length of stay that is 20% longer and they use 50% more lab/imaging services than younger populations.[17, 18] In addition, Geriatric ED patients are 400% more likely to require social services. Despite the focus on geriatric acute care in the ED manifest by disproportionate use of resources, these patients frequently leave the ED dissatisfied and optimal outcomes are not consistently attained.[19-21]

Despite the fact that the geriatric patient population accounts for a large, and ever increasing, proportion of ED visits, the contemporary emergency medicine management model may not be adequate for geriatric adults.[7,8] A number of challenges face emergency medicine to effectively and reliably improve post-ED geriatric adult outcomes.[22] Multiple studies demonstrate ED physicians' perceptions about inadequate geriatric emergency care model training.[14, 23] Many common geriatric ED problems remain under-researched leaving uncertainty in optimal management strategies.[24-26] In addition, quality indicators for minimal standard geriatric ED care continue to evolve.[27] Older adults with multiple medical co-morbidities, often multiple medications, and complex physiologic changes present even greater challenges.[28,29] Programs specifically designed to address these concerns are a realistic opportunity to improve care.[7,8]

Similar programs designed for other age groups (pediatrics) or directed towards specific diseases (STEMI, stroke, and trauma) have improved care both in individual EDs and system-wide, resulting in better, more cost effective care and ultimately better patient outcomes.[30-32]

GERIATRIC ED - PURPOSE

Purpose

The purpose of these Geriatric Emergency Department Guidelines is to provide a standardized set of guidelines that can effectively improve the care of the geriatric population and which is feasible to implement in the ED. These guidelines create a template for staffing, equipment, education, policies and procedures, follow-up care, and performance improvement measures. When implemented collectively, a geriatric ED can expect to see improvements in patient care, customer service, and staff satisfaction.[7, 11] Improved attention to the needs of this challenging population has the opportunity to more effectively allocate health care resources, optimize admission and readmission rates, while simultaneously decreasing iatrogenic complications and the resultant increased length-of-stay and decreased reimbursement.

A goal of the geriatric ED is to recognize those patients who will benefit from inpatient care, and to effectively implement outpatient care to those who do not require inpatient resources. To implement most effectively, the geriatric ED will utilize the resources of the hospital, ED and inpatient, as well as outpatient resources. Making effective and expedient outpatient arrangements available to the geriatric population is of critical importance to the care of this population, recognizing that acute inpatient events are often accompanied by functional decline, increased dependency and increased morbidity.[33, 34] By using providers, including nurse practitioners, nurses, social workers, physician assistants, and physicians to coordinate care in the ED, the inpatient units, and during the immediate post-ED discharge period, the geriatric ED creates the opportunity to care for geriatric patients in the environment most conducive to a positive outcome.

The benefits of the Geriatric ED to the geriatric patient population are multiple and clear. By focusing attention and resources on the most common needs of the geriatric ED patient, care can be optimized. The benefit of a Geriatric ED to a hosting hospital can be multiple as well. These improved patient care standards can become a significant marketing tool for hospitals looking to reach out to the Medicare population and partner with extended care facilities. A Geriatric ED can market the ED to attract a patient population that may also utilize higher reimbursing hospital-based programs, including cardiac, orthopedic, and neurologic care. Further, with Medicare reimbursements decreasing and payment for iatrogenic complications such as wounds, catheter associated infections, etc. impacting hospital reimbursement; the need for special attention to geriatric needs has become even more pressing.

The term “geriatric” has had different definitions over the past decades. In 1985, the term "oldest old" was coined to identify those 85 years of age and older. Later Fries, et al defined three groups by dividing the older adult population into the young old (often 65-74), the middle old (75-85) and the oldest old (>85).[35, 36] The World Health Organization defined the older population starting at age 60.[37] Our guidelines used the construct that age 65 and older would be the geriatric population served by the Geriatric ED. Many hospitals may find that using the age 65 and older does not match the needs of their population and available resources. It may be most appropriate that each hospital identify the age for patients to be seen in their Geriatric ED. Through the continuum of physiologic aging complexity of health care issues increase and as such, the benefits of a Geriatric ED increase concurrently. The age range to be a patient in the Geriatric ED can be based on the literature, meaning age 60 or 65, or can be defined by the specific hospital community. One hospital uses age 55 based on when resources are available; another uses 65 years of age and another uses 75 years of age as the beginning age range for their Geriatric ED.

The recommendations found in this packet represent research and consensus-based best practices from the perspectives of the American College of Emergency Physicians, Society for Academic Emergency Medicine, American Geriatrics Society, and Emergency Nurses Association. With implementation of the following recommendations, hospitals, regardless of size, will positively impact the care of the geriatric emergency patients.

STAFFING/ADMINISTRATION

The Geriatric ED staff and administration provides a multi-disciplinary team of care providers focused on the varying needs of the geriatric population. By providing trained staff in the ED, as well as readily available staff for inpatient care and outpatient follow up, the Geriatric ED can optimize ED visits, effectively deliver and/or coordinate care in a less costly and more comfortable outpatient setting when appropriate and coordinate inpatient resources for high-risk patients. An effective program will involve hospital site-specific staff as well as overall local coordination resources.

Background:

Although published studies have not been clear on outcomes resulting from staffing modifications for the care of geriatric patients, they have demonstrated high levels of endorsement for ED staffing enhancements in general (94%), for the availability of specialized nurses (85%), pharmacists (74%), social workers (88%), geriatric consults (79%) and a designated professional to coordinate geriatric services (91%). There were moderate levels of endorsement for the availability of physical therapy (59%) and occupational therapy (53%).[38]

One common approach to enhanced older adult ED staffing in the literature is the use of geriatric consultation services in the ED.[39-42] Yuen, et al. found that over 26 months, there were 2202 geriatric

consultations (85 per month), with admission avoided in 85% (47% discharged home, 38% admitted to a "convalescent hospital").[42] Foo and colleagues evaluated geriatric assessment and intervention prior to discharge of geriatric patients from an ED observation unit. In the intervention group, 72% of patients had unrecognized needs requiring intervention. This group had fewer ED revisits (IRR 0.59) and hospital admissions (IRR 0.64) at 12 months.[41] However, results are not consistent across studies. Sinoff et al also evaluated an ED geriatric consult service and found a significantly higher admission rate (64%), with a 2-year mortality of 34% and institutionalization rate of 52%.[40] Social workers and case managers are essential to efficient geriatric ED management. Effective geriatric case management strategies continue to evolve.[43] Innovative models using volunteers to assess geriatric ED patients have also been evaluated and are acceptable to ED nurses and physicians.[29]

Recommendations:

- The Geriatric ED will have staffing protocols in place to provide for geriatric-trained providers, including physician and nurse leadership and ancillary services. These protocols should include plans for times when such services may not be available.
- Staff members of the Geriatric ED will participate in educational/training to ensure high-quality geriatric care.
- Although departments may differ in the availability of staffing resources, departments should have available the following positions either as part of a hospital-based Acute Care of Elders (ACE) team or specific for the ED:

Geriatric Emergency Department Medical Director

- Qualifications:
  - Best practiced by a board-certified emergency physician with training in geriatrics
  - Completion of eight hours of geriatric appropriate CME every two years
- Responsibilities:
  - Member of hospital ED *and* Medicine committee
  - Oversight of geriatric performance improvement program
  - Liaison with Medical Staff for geriatric care concerns
  - Liaison with outpatient care partners including Skilled Nursing Facilities (SNFs), Board and Care facilities, home health providers, etc.
  - Identify needs for staff education and implement educational programs when appropriate.
  - Review, approve, and assist in the development of all hospital geriatric policies and procedures

Geriatric Emergency Department Nurse Manager

- Qualifications:
  - At least two years of experience in geriatrics (or in an ED that sees geriatric patients) within the previous five years
  - Experience with QI programs is recommended
  - Completion of eight hours of Board of Registered Nursing (BRN) approved continuing education units (CEU) in geriatric topics every two years.
- Responsibilities:
  - Participate in the development and maintenance of a geriatric performance improvement program
  - Liaison with outpatient care partners including, but not limited to SNFs, Board and Care facilities, home health providers, etc.
  - Member of selected hospital-based ED and/or medicine committees
  - Identify needs for staff education and implement educational programs when appropriate.

Staff Physicians
- Provide twenty-four-hour ED coverage or directly supervised by physicians functioning as emergency physicians. This includes senior residents practicing at their respective hospitals only.
- Staff physicians are encouraged to participate in geriatric specific education with a goal of 4 hours of CME annually specifically focused on the care of geriatric patients.

Staff Nurses
- Nursing staff is encouraged to participate in geriatric specific education.

Medical Staff Specialists
- Specialists will be available for consultation either by established medical staff policies or by pre-arranged transfer arrangements. Although each hospital's medical staff will support different specialist services, it is recommended that the Geriatric ED have access to:
  - Geriatrics
  - Cardiology
  - General Surgery
  - GI
  - Neurology
  - Orthopedists
  - Psychiatry, preferably with a geriatric specialty
  - Radiology

Ancillary Services
- Case management and social services
- Mid-level provider/physician extenders (optional, but recommended)
- Occupational/Physical therapists
- Pharmacists

FOLLOW UP AND TRANSITION OF CARE

Acute hospitalization is associated with increased rates of acute delirium, nosocomial infections, iatrogenic complications, and functional declines in the geriatric adult.[44] Thus, one of the main goals of the Geriatric ED is to decrease hospital admissions. Making effective and expedient outpatient arrangements available to the geriatric population is of critical importance to the care of this population. However, discharge from the ED to the community presents significant challenges to the geriatric population.

Background:
Published studies on ED-based interventions with improved access to community resources have had mixed results. Most demonstrate little effect of these interventions on either ED utilization or prevention of complications.[45-48] However, effective transition of care is clearly required to facilitate outpatient care after an ED evaluation. This transition process presents many challenges. In an era of daily ED crowding, effective, reliable discharge instructions are a challenge to all populations, particularly for the geriatric population.[49] Older ED patients identify misinformation as a primary course of dissatisfaction with their emergency care, a problem confounded and magnified by ongoing under-recognition of cognitive dysfunction, lower health literacy, and financial impediments for prescriptions and recommended outpatient follow-up.[50-52]

Recommendations:

- The Geriatric ED will have discharge protocols in place that facilitate the communication of clinically relevant information to the patient/family and outpatient care providers, including nursing homes. Essential information to optimize continuity of care at the time of discharge should include the following data elements:

    - Presenting complaints
    - Test results and interpretation
    - ED therapy and clinical response
    - Consultation Notes (in person or via telephone) in ED
    - Working discharge diagnosis
    - ED physician note, or copy of dictation
    - New prescriptions and alterations with long-term medications
    - Follow-up plan

Clinical information will be presented in a format in a way best suited for elder adults:

- Large font discharge instructions
- Health Insurance Portability and Accountability Act (HIPAA) compliant copied discharge instructions should be provided to family and care providers.

The Geriatric ED will have a process in place that effectively provides appropriate outpatient follow up either via provider-to-patient communication or the provision of direct follow up clinical evaluation.

- Although telephone follow up is the most commonly used, the use of newer technology, including telemedicine alternatives is recommended.

The Geriatric ED will maintain relationships and resources in the community that can be used by patients on discharge to facilitate care.

- Medical follow up
- Primary MD or “medical home”
- Case Manager to assist with compliance with follow up
- Safety Assessments
- Mobility
- Access to care and medical transportation resources
- Medical equipment
- Prescription assistance and education
- Home health, including outpatient nursing resources
- ADL resources including meal programs, etc.

Although a goal of the Geriatric ED should be to maintain older adults in their own homes whenever possible, some patients will require either short term or long-term placement into facilities when care cannot be provided appropriately at home. Thus, the Geriatric ED should have available community resources for the placement of patients to the appropriate level of care, including nursing homes, rehab facilities, board and cares, etc.

EDUCATION

The success of the Geriatric ED program rests largely on the education of a multi-disciplinary staff directed toward the needs of the geriatric population. Residency and continuing medical education must take into account the unique physiology, atypical disease presentations, and psychosocial needs of older

persons.[14,23,53] Education and training evaluation of emergency personnel should be competency-based. The curriculum should contain interdisciplinary content, and learners should be assessed for interdisciplinary core competencies. Effective instructional methods include a mix of didactic lectures, case conferences, case simulations, clinical audits, journal clubs, web-based materials, and supervised patient care. Hands-on training is strongly preferred by many learners. Education may be effectively organized around the assessment of common and important geriatric chief complaints.

A Geriatric ED educational program is expected to include an initial initiative directed towards program implementation, increasing staff awareness of the geriatric population's needs, and specific policy and procedure initiatives.[54] Educational programs can be created and implemented internally (specific for each hospital), as part of a larger CME program, or through participation in externally created programs.

An educational program should include:

- Initial "go-live" implementation sessions
  - Involvement of multi-disciplinary teams including hospital-based leadership and outpatient resources
  - Geriatric emergency medicine didactic sessions for physician, nursing, and multi-disciplinary staff focused on geriatric care issues to be assessed and managed in the Geriatric ED
  - In-service education on geriatric-specific equipment
  - Program introduction for community-based organizations caring for geriatric patients with opportunity for input.
- Community awareness, involvement, and outreach
  - Emergency Medical Services (EMS) personnel perceive a deficit in their training as it relates to care of older patients, particularly in the areas of education and psychosocial issues.[55] The Geriatric ED should provide training for EMS personnel who rescue and transport older persons to their facilities.[56,57]
  - The Geriatric ED should also provide educational self-management materials for older adults and their families.
- Regular educational assessment and implementation of site-specific educational needs
  - QI data review with process improvement implementation
  - Periodic education/re-education of disease specific presentations with updates on policy/procedure changes, community care programs, etc.
  - An important educational goal is to provide familiarity with use of quick, bedside assessment tools.

Educational needs will be assessed on an ongoing basis by the Geriatric Medical Director and Geriatric Liaison nurse and implemented as needed based on staff needs. As the program grows and the competency of staff changes over time, it is expected that educational needs will change. It is highly recommended that education be coordinated with peer review cases, based on cases experienced in the local ED.

Although educational content should be tailored to individual department needs, recommended content includes the following:

- Atypical presentations of disease[23, 58-62]
- Trauma, including falls and hip fracture[23, 58, 62-66]
- Cognitive and behavioral disorders[23, 58-60, 62, 66-72]
- Modifications for older patients of emergent interventions[23]
- Medication management[23, 58-62, 66-69, 71]
- Transitions of care and referrals to services[23, 60, 61, 67-69, 71, 73]

- Pain management and palliative care[23, 66, 74]
- Effect of comorbid conditions[23, 58]
- Functional impairments and disorders[58-61, 71]
- Management of the group of diseases peculiar to the geriatric adult, including conditions causing abdominal pain[58-60, 62, 66-68, 75]
- Weakness and dizziness[58, 60, 63, 76]
- Iatrogenic injuries[67, 68, 77]
- Cross-cultural issues involving older patients in the emergency setting [63]
- Elder abuse and neglect[58, 61, 66, 71]
- Ethical issues, including advance directives[58, 61, 62, 69, 78]

QUALITY IMPROVEMENT

Implement an effective Quality Improvement (QI) program with the goal to collect and monitor data (Figure 2) in a manner conducive to staff education and program success.

Geriatric Program Quality Improvement Plan

- A geriatric program shall be developed and monitored by the Geriatric Medical Director and Geriatric Nurse Manager.
- A geriatric report shall be generated and delivered to the ED committee no less than quarterly by the Geriatric Medical Director.
- The program shall include an interface with pre-hospital care, ED, trauma, critical care, alternative level care facilities and hospital wide QI activities.
- A mechanism shall be established to easily identify geriatric patient (65 years & older) visits to the ED.
- The geriatric QI program will include identification of the indicators, methods to collect data, results and conclusions, recognition of improvement, action(s) taken, and assessment of effectiveness of actions and communication process for participants.
- A mechanism to document and monitor the geriatric education of the Geriatric ED staff shall be established.
- The geriatric QI program shall include reviews of the following geriatric patients seen in the ED:
  - Geriatric volume
  - Admission rate
  - Readmission rate
  - Deaths
  - Suspected abuse or neglect
  - Transfers to another facility for higher level of care
  - Admissions requiring upgrading of level of care to ICU within 24 hours of admission
  - Return visits to the ED within 72 hours
  - Completion of at-risk screening tool[79]
  - Completion of follow up reevaluation for discharged patients

- In addition to the above, individual disease specific entities that facilities may also monitor include:
  - Falls in the geriatric adult
    - Prevalence
    - Prevalence of traumatic injuries associated with falls
      - Hip fractures
      - Traumatic intracranial hemorrhage

    - Blunt abdominal injuries
    - Death
  - Poly-pharmacy screening in patients with falls
  - Screening of those at-risk of falls
    - Physical therapy evaluation completed on at-risk patients.
  - Referral patterns after fall (visual screening, gait rehab, etc.)
- Catheter use and catheter associated UTIs (CAUTIs)
  - Foley insertion and indication checklist usage data
  - Days of catheter use in hospital
  - Automatic discontinuation orders utilized
  - Total catheter days
  - ED CAUTI prevalence
- Medication reconciliation/pharmacy oversight
  - Documentation of high-risk medications
  - Usage of high-risk medication in ED (See addendum)
  - Percentage of revisits for medication adverse reaction or noncompliance
- Restraint
  - Indication documented
  - Chemical restraint attempted and with which medication

Figure 2. Sample Geriatric ED Quality Assessment Instrument (Dashboard)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GLOBAL MEASURES												
Patient volume >65												
% of total admissions												
Readmissions												
72 hour ED revisits												
24 hour admission upgrades												
Geriatric abuse												
Deaths												
DISEASE SPECIFIC												
FALLS												
Hip Fractures												
Traumatic ICH												
Blunt Abdominal Injury												
Death												
Fall-Risk Assessment												
Physical Therapy Eval												
URINARY CATHETERS												
Check List Used												
Catheter Days												
Automatic Discontinue												
CAUTI Stay Length												
MEDICINE MANAGEMENT												
High Risk Meds Noted												
ED High Risk Meds												
Adverse Reaction Revisit												
Non-compliance Revisit												
DELIRIUM												
Screen Documented												
Restraint Indications												
Chemical Restraint Attempt												
Behavior Physical Restraint Used												

EQUIPMENT AND SUPPLIES

Geriatric patient care requires equipment designed for a patient population with specific needs. Challenges involving mobility, incontinence, behavioral needs, etc. are best met with equipment designed for the effective and comfortable evaluation and treatment of geriatric patients, while minimizing iatrogenic complications. The physical plant of a Geriatric ED should focus on structural modifications that promote improvements in safety, comfort, mobility, memory cues, and sensorial perception both with vision and hearing for elders in the ED. Common key features are those that enhance lighting, colors, enhanced signage – all of these are better, not only for older adults, but for everyone. Although a separate space within an ED, or a separate ED entirely, devoted to geriatrics may be beneficial, most hospitals will be more capable of effectively implementing a program in which any ED bed can be made "geriatric friendly" with the presence of the equipment and supplies listed.

The list below is a suggested starting point for the design and equipping of a Geriatric ED.[7,11,80]

- Furniture improvements:
  - Exam chairs/reclining chairs – may be more comfortable for some geriatric patients and facilitate transfer processes.[81]
  - Furniture should be selected with sturdy armrests and ED beds at levels that allow patients to rise more easily for safe transferring. Furniture should be selected using the Evidence-Based Design Checklist. Some studies show that patients often fall when trying to get out of bed unsupervised or unassisted. They also show that bedrails do not reduce the amount of falls and may increase the severity of the fall.
  - Extra thick/soft gurney mattress – decreases possible development of skin break down and decubitus ulcer formation.[82]
  - Choice of upholstery should be soft and moisture proof to protect the fragile skin of older patients. Should also be selected to reduce surface contamination linked to health care associated infections. "Surfaces are easily cleaned, with no surface joints or seams," "materials for upholstery are impervious," "surfaces are nonporous and smooth." This should hold true especially in the ED where there is a high turnover with a large variety of diseases potentially present.
  - Economic evidence supports early prevention of pressure ulcers in ED patients by the use of pressure-redistributing foam mattresses.[83] Another alternative that has been shown to reduce pain and improve patient satisfaction is the use of reclining chairs in the ED instead of ED gurney beds.[81]
- Special equipment
  - Body warming devices/warm blankets
  - Fluid warmer
  - Non-slip fall mats[84]
  - Bedside commodes – where necessary to minimize fall risk
  - Walking aids/devices[85]
  - Hearing aids[86]
  - Monitoring equipment
  - Respiratory equipment to include a fiberoptic intubation device
  - Restraint devices
  - Urinary catheters to include condom catheters – minimize risk of CAUTI
- Visual Orientation improvements:
  - Lighting – soft light is recommended, but exposure to natural light is also shown to be beneficial for recovery times and decreasing delirium

- Light colored walls with a matte sheen and light flooring with a low-glare finish should be used to optimize lighting and reduce glare. While older adults require three to four times as much light as young adults for visual clarity, light scatter also increases with aging eyes. Simply increasing the level of lighting can improve acuity, and it is recommended that lighting consist of a combination of ambient and spot lighting. In contrast, glare and shine along with difficulty seeing the edges of pale colored objects have been shown to be impediments for older adults in their ability to function and confusing for those with cognitive impairments. Thus, improvements that increase lighting while reducing glare can include shielding of illuminating fixtures above the upper visual field. Fixtures that bounce light off the ceiling or of walls increase overall room lighting while glare can be reduced with the use of matte surfaces. Uniform indirect light.
- Patients should have control of the lighting in their space if they wish to sleep at a time when the other lights are on, allowing for fewer sleep disturbances.

o Patterns
- Contrast sensitivity in aging vision can be both confusing and hinder movement in geriatric patients, especially with reduced depth perception. Patterns that have dominant contrasts may create a sense of vertigo or even seem to vibrate for older adults. Others may misperceive patterns as obstacles or objects (eg, leaf patterns on flooring may be seen as real live leaves to avoid when walking).

o Colors
- Secondary to vision and perception changes, color choice for facilities and structure should be considered. Color can be used to enhance visual function and depth perception. Avoid monochromatic color schemes and allow for colors to contrast between horizontal and vertical surfaces. Similar colors look the same for those with poor vision. Older adults experience a decrease in the ability to differentiate cool colors (greens, blues) as opposed to warm colors (yellows, oranges). In poorly lit areas, yellow is the most visible. Orange and reds are attention grabbing. Blues appear hazy and indistinct and may appear gray due to yellowing of the lens.

- Acoustic Orientation Improvements – private rooms or acoustically enhanced drapes, if necessary, for better communication and decrease levels of anxiety and delirium
  - An enhanced acoustical environment may facilitate communication between patients and staff and between staff. While older adults may have decreased ability to hear certain words secondary to a loss of hearing in high-frequency ranges, they also have increased sensitivity to loud sounds. The use of sound-absorbing materials (eg, carpet, curtains, ceiling tiles) may reduce background noise and can also increase patient privacy. The use of portable hearing assist devices for patients may also enhance communication. Loud noise sources in the hospital should be reduced (eg, overhead paging, machines). There is an increase in the amount of studies showing how music can decrease anxiety, heart rate and blood pressure.[87, 88] Patients could be provided with a way to listen to music and choose their programming without disturbing others.
  - An enhanced acoustical environment can also increase patient privacy and safety. One study performed in an ED found that "percent of the patients in curtained spaces reported they withheld portions of their medical history and refused parts of their physical examination because of lack of privacy. None of the patients in rooms with walls reported withholding information."
- Enhanced signage – enhance communication
- Miscellaneous safety enhancements
  - Doors should be fitted with handles (not round knobs) for ease of use

Hospitals are expected to utilize their existing resources to meet the needs of this population. With minimal additional expense for equipment suggested above, geriatric care can be optimized.

POLICIES, PROCEDURES AND PROTOCOLS

The policies, procedures, and protocols listed are recommended as a comprehensive, directed, although not exhaustive, approach to many of the challenges involved in the care of geriatric patients in the ED. Emergency departments are encouraged to use, change, or integrate their local policies, procedures, and protocols whenever possible. These policies should be available to be referenced by staff and should be followed as part of the routine care of patients.

- Triage and initial evaluation
  - Family/care provider presence/participation in the triage process is highly encouraged
- Initial screening tool to recognize and evaluate at-risk seniors *
- Patient safety
- Suspected elder/dependent adult abuse and neglect
- Sedation/analgesia in the geriatric patient
- Assessment and evaluation of delirium/agitation *
  - Restraint policies
- DNR/POLST/palliative care
- Patient Death
  - Inclusion of the grieving family in the "code" situation is encouraged
- Urinary catheter placement guidelines *
- Fall risk assessment and clinical guideline for the evaluation of the "geriatric adult fall" *
- Wound assessment and care
- Transition of Care and Follow-up
- Medication reconciliation and pharmacy review *

*Denotes sample policies and procedures included in the next section

Sample Policy and Procedures

The Screening of Geriatric Patients for Risk of Added Needs Assessment, Consultation and Intervention

Background: The geriatric population presenting to the ED is a heterogeneous patient population. Although many patients in this population are functional, independent, and generally in good health, it has been shown that a visit to the ED, even for a relatively minor issue, may be a "red flag" event heralding functional decline and the potential need for added health resources. Other patients in this population are frailer. In general, these patients will require longer ED and hospital lengths-of-stay and consume more health care resources than their younger cohorts. Screening of this population in the ED may allow an opportunity to intervene in those patients who require added resources to help improve outcomes.

Previously published studies on the use of prognostic screening tools in this patient population have mixed results.[89-93] What seems to be clear though is that a team driven, simple to use screening tool can be powerful in helping act to prevent poor outcomes and improve the ED and hospital experience for the geriatric patient.[94-96]

Goals of an effective screening program include the prevention or limitation of delirium, prevention of functional decline, prevention of iatrogenic injury including adverse drug events and falls, as well as a

more effective transition of care through the care cycle from outpatient to ED to inpatient and back again to outpatient.

Policy: It is the policy of the Geriatric ED to screen all geriatric patients for high-risk features. Those patients screened to be at risk will be referred to health care resources, both inpatient and outpatient, to help improve overall health and functional outcomes.

Recommended Resources:

- Nurse screening tool
- Resource list including, but not limited to:
  - Physical therapy
  - Occupational therapy
  - Home health providers
  - Case managers
- Outpatient follow up resources

Procedure:

- All geriatric patients, regardless of the presenting complaint shall be screened (on the initial index visit, not follow up visits) using the "Identification of Seniors at Risk Tool"[89] or a similar risk screening tool.[97, 98] This is a simple, quick screening tool that should be completed by the treating nurse as part of the initial evaluation. Answers to the screening questions can be provided by the patient, family, care providers, or others involved in the patient's assessment and care.

  Identification of Seniors At-Risk Tool
  - Before the injury or illness, did you need someone to help you on a regular basis?
  - Since the injury or illness, have you needed more help than usual?
  - Have you been hospitalized for one or more nights in the past six months?
  - In general, do you see well?
  - In general, do you have serious problems with your memory?
  - Do you take more than 3 medications daily?

  >1 positive response is considered high-risk

- The treating physician will review the results of the initial screening during the index visit.
- Any patient noted to be at-risk (on the ISAR that means one or more positive responses on the initial screening tool) will be provided with appropriate resources focused to the individual needs.
- All patients noted to be at-risk requiring admission to the hospital will be referred to case management upon admission with the risk assessment results communicated.
- All patients noted to be at-risk that are to be treated as an outpatient will be followed up the following day. Although phone consultation may be adequate, in-person evaluations either in the ED, by the primary physician, or by an RN or mid-level provider is preferable.
- Specific at-risk features will be addressed during the index visit in the ED. Recommendations and referrals will be documented as part of the "Medical Decision Making" and will be addressed along with the case-specific discharge instructions.

Performance Improvement: The screening of geriatric patients for general at-risk features will require ongoing education and reinforcement for physician, mid-level, and nursing providers. It is recommended that compliance of the completion of the initial assessment be assessed on a regular basis.

Guidelines for the Use of Urinary Catheters in the Geriatric Population

Background: Health care-associated and hospital acquired infections are increasing occurrences and pose a significant risk of morbidity and mortality to affected patients. Between 1990 and 2002 hospital admissions for urinary tract infections soared to 16% of all hospital admissions. Urinary tract infections associated with urinary tract catheter insertion account for the highest percentage (80%) of hospital and health care associated infections and approximately 1 in 5 patients being admitted to the hospital receive an indwelling catheter at some point.[99-104] The risk of urinary tract infection from an indwelling catheter increase about 5% per day and a small portion of these patients develop bacteremia and sepsis as a result of indwelling urinary tract catheters with a significant increase in health expenditures and length of stay.[100, 103, 104] Several studies suggest that many of these urinary tract catheters are inappropriately placed and needlessly expose patients to the inherent risk of catheter placement without benefit.[105-107] The Centers for Medicare and Medicaid Services (CMS) has identified these health care-associated infections as preventable and have recommended that hospitals take measures to minimize the catheter related infections.[103] Several groups have identified specific measures aimed at decreasing the incidence of CAUTIs.[101, 102, 104] Yet, despite these proven efforts, national hospital compliance with preventative measures is lacking and lacks uniformity.[108, 109] Of primary importance is the screening and appropriate identification of patients for indwelling catheter placement, proper technique, educating staff and process improvement measures such as infection rate auditing and limited duration of use (references). As an integral part of the health care system the ED recognizes the importance of selecting appropriate patients for catheter insertion.

Purpose: The purpose of this policy and procedure is meant to provide a guideline on indications for the appropriate use of indwelling catheter and does not replace the clinical judgment of the physician.

Procedure: Insertion of urinary catheters (See Figure 3):

- The patient must have an indication for use of an indwelling catheter and a physician order in the chart. According to the Infectious Disease Society of America and other expert opinion, these indications are as follows:[102, 104, 110, 111]
  - Urinary retention/obstruction
  - Very close monitoring of urine output and patient unable to use urinal or bedpan
  - Open wound in sacral or perineal area with urinary incontinence
  - Patient too ill, fatigued or incapacitated to use alternative urine collection method
  - Patient s/p recent surgery
  - Management of urinary incontinence on patient's request
  - Other – needs specification and clarification documented

Other acceptable indications also include

- Neurogenic bladder
- Emergent pelvic ultrasound
- Emergent surgery
- Altered mental status or unresponsive
- Urologic procedures
- Hip fracture
- Hospice or palliative care

After receiving a physician order with the appropriate indications documented, nursing will insert the indwelling catheter as per protocol, using sterile technique.

Discontinuation of urinary catheters:

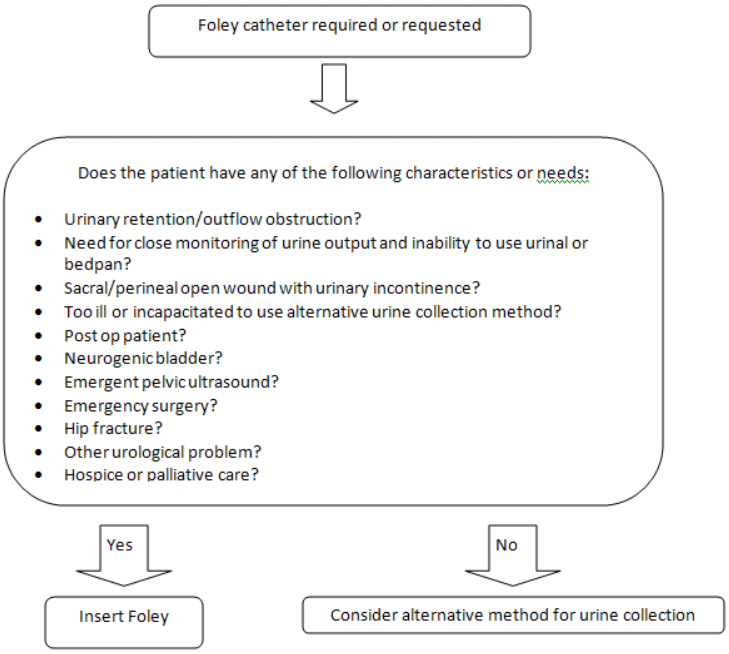
- Indwelling catheters will be removed as soon as feasibly possible. Evidence shows that catheter associated bacteriuria increases and is directly associated with catheter days. Accordingly, daily catheter rounds should prompt for continued use or removal of indwelling catheters .[104, 109]

Process improvement:

As part of ongoing efforts to improve use of indwelling catheters in appropriate patients, periodic audits will be performed to check for the following:

- Is a physician order for an indwelling urinary catheter present?
- Was the procedure documented including time and date?
- Was sterile technique used?
- What is the rate of CAUTI?

Figure 3. Foley Catheter Insertion Algorithm



Geriatric Medication Management

Background: Geriatric patients are at high-risk for adverse events related to medication.[4, 26, 112, 113] The aging population tends to take more medications, have more co-morbidities, and have differing responses to medications when compared to their younger cohorts.[114] Furthermore, the "normal" aging physiology often leads to changes in metabolism with medications as well as problematic responses to "normal" medication dosing.

Polypharmacy in this population is especially problematic.[113, 115] Population studies have indicated that 40% of patients greater than 65 years of age take 5-9 medications daily, and 18% take more than 10. If you consider there is a 50-60% chance of a drug-drug interaction when taking 5 medications and a 90% chance of a drug-drug interaction when taking 10 or more medications, the burden of medications on the evaluation and care of the geriatric population seems clear.

Overall, adverse medication events not only represent a major cause of ED visits and hospital admissions, they can also lead to increased patient morbidity and mortality, increased resource utilization and increased overall ED and hospital length-of-stay.[115-118]

Current "medication reconciliation" procedures are a good start towards addressing this issue, but do not go far enough in the management of medications in the geriatric population. Implementation of a concise, goal-oriented, team approach to medication management beginning in the ED can potentially increase awareness of adverse drug events as presenting diagnoses, minimize the use of high-risk medications in the geriatric adult, minimize the use of medications with potential interactions, and positively influence the ED care, hospitalization, and subsequent outpatient care of these patients.

Policy: It is the policy of the Geriatric ED to address the use of medications in the geriatric population presenting to the ED. A medication list will be obtained and completed as accurately as possible, taking advantage of patients, caretakers, and medical record resources. Patients taking more than 5 medications, any high-risk medications, or presenting with signs or symptoms of adverse drug events will be managed with a multi-disciplinary approach focused on improving patient outcomes.

Required Resources:

- Established medication "reconciliation" tool
  - Computer-based resources can be effective for obtaining accurate medication lists when patients or care takers are not able to provide them.
- Pharmacy leadership/involvement
  - Maintenance of high-risk medication list
- A multi-disciplinary team, including geriatric specialists, pharmacists, etc. is recommended.

Procedure:

- All geriatric patients presenting to the ED, regardless of presenting complaint, will have a medication list completed.
  - Accuracy is often difficult in the ED scenario. Involving the patient, care providers, and family in this procedure is critical.
  - Computer resources should be developed and utilized whenever possible to maintain accurate medication lists for patients representing to the ED or hospital.
- The completed medication list will be made available to the attending ED physician and treating nurse as soon as possible.
- The medication list will be screened by both the nurse and attending physician for:
  - Polypharmacy >5 medications
  - Presence of any high-risk medications
    - Hospital pharmacies should develop and maintain a list of high-risk medications. Using "Beers criteria" or other established lists is recommended. Although these lists should be hospital specific, they should at least include:
      - Anti-coagulants and anti-platelet medications
      - Anti-hyperglycemics
      - Cardiac medications including digoxin, amiodarone, B-Blockers, Ca channel blockers
      - Diuretics
      - Narcotics
      - Anti-psychotics and other psychiatric medications
      - Immunosuppressant medications, including chemotherapy agents

- Patients requiring hospital admission that are noted to have either polypharmacy concerns or the presence of any high-risk medications will be referred to a multi-disciplinary team to include a pharmacist.
  - The multi-disciplinary team will interact with the attending physician with goals of minimizing drug-drug interactions, minimizing polypharmacy and high-risk medications during hospitalization and upon discharge.
- Patients discharged from the ED that are noted to have either polypharmacy concerns or the presence of any high-risk medications will be referred to their primary physician for review of their medications as appropriate for their clinical situation.

Performance Improvement:

- High-risk medication lists will be reviewed annually.
- Consider reviewing the use of a high-risk medication annually. For example, the use of diphenhydramine in the geriatric adult can be reviewed with a goal of limiting its use in the geriatric population.
- Tracking and trending of adverse drug response admissions
- Tracking and trending of pharmacist interventions for admitted patients noted with either polypharmacy or high-risk medications.

American Geriatrics Society Beers Criteria 2012

Source: http://tinyurl.com/BeersMeds2012

AGS BEERS CRITERIA
FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS
FROM THE AMERICAN GERIATRICS SOCIETY

This clinical tool, based on *The AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria)*, has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the *Beers Criteria* catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the *AGS 2012 Beers Criteria* using an enhanced, evidence-based methodology. Each criterion is rated (quality of evidence and strength of evidence) using the American College of Physicians' Guideline Grading System, which is based on the GRADE scheme developed by Guyatt et al.

The full document together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

The goal of this clinical tool is to improve care of older adults by reducing their exposure to Potentially Inappropriate Medications (PIMs).

- This should be viewed as a guide for identifying medications for which the risks of use in older adults outweigh the benefits.
- These criteria are not meant to be applied in a punitive manner.
- This list is not meant to supersede clinical judgment or an individual patient's values and needs. Prescribing and managing disease conditions should be individualized and involve shared decision-making.
- These criteria also underscore the importance of using a team approach to prescribing and the use of non-pharmacological approaches and of having economic and organizational incentives for this type of model.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the *2012 AGS Beers Criteria* to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patient's receiving palliative and hospice care). If a clinician is not able to find an alternative and chooses to continue to use a drug on this list in an individual patient, designation of the medication as potentially inappropriate can serve as a reminder for close monitoring so that the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Anticholinergics (excludes TCAs)	
First-generation antihistamines (as single agent or as part of combination products) ■ Brompheniramine ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine ■ Diphenhydramine (oral) ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine	**Avoid.** Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other anticholinergic effects/ toxicity. Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate. *QE = High (Hydroxyzine and Promethazine), Moderate (All others); SR = Strong*
Antiparkinson agents ■ Benztropine (oral) ■ Trihexyphenidyl	**Avoid.** Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease. *QE = Moderate; SR = Strong*

Table 1 (continued from page 1)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Antispasmodics ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine	**Avoid except in short-term palliative care to decrease oral secretions.** Highly anticholinergic, uncertain effectiveness. *QE = Moderate; SR = Strong*
Antithrombotics	
Dipyridamole, oral short-acting* *(does not apply to the extended-release combination with aspirin)*	**Avoid.** May cause orthostatic hypotension; more effective alternatives available; IV form acceptable for use in cardiac stress testing. *QE = Moderate; SR = Strong*
Ticlopidine*	**Avoid.** Safer, effective alternatives available. *QE = Moderate; SR = Strong*
Antiinfective	
Nitrofurantoin	**Avoid for long-term suppression; avoid in patients with CrCl <60 mL/min.** Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl <60 mL/min due to inadequate drug concentration in the urine. *QE = Moderate; SR = Strong*
Cardiovascular	
Alpha, blockers ■ Doxazosin ■ Prazosin ■ Terazosin	**Avoid use as an antihypertensive.** High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/ benefit profile. *QE = Moderate; SR = Strong*
Alpha agonists ■ Clonidine ■ Guanabenz* ■ Guanfacine* ■ Methyldopa* ■ Reserpine (>0.1 mg/day)*	**Avoid clonidine as a first-line antihypertensive. Avoid others as listed.** High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension; not recommended as routine treatment for hypertension. *QE = Low; SR = Strong*
Antiarrhythmic drugs (Class Ia, Ic, III) ■ Amiodarone ■ Dofetilide ■ Dronedarone ■ Flecainide ■ Ibutilide ■ Procainamide ■ Propafenone ■ Quinidine ■ Sotalol	**Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation.** Data suggest that rate control yields better balance of benefits and harms than rhythm control for most older adults. Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT interval prolongation. *QE = High; SR = Strong*
Disopyramide*	**Avoid.** Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred. *QE = Low; SR = Strong*
Dronedarone	**Avoid in patients with permanent atrial fibrillation or heart failure.** Worse outcomes have been reported in patients taking dronedarone who have permanent atrial fibrillation or heart failure. In general, rate control is preferred over rhythm control for atrial fibrillation. *QE = Moderate; SR = Strong*
Digoxin >0.125 mg/day	**Avoid.** In heart failure, higher dosages associated with no additional benefit and may increase risk of toxicity; decreased renal clearance may increase risk of toxicity. *QE = Moderate; SR = Strong*

American Geriatrics Society Beers Criteria 2012 (continued)

Table 1 (continued from page 2)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Nifedipine, immediate release*	**Avoid.** Potential for hypotension; risk of precipitating myocardial ischemia. *QE = High; SR = Strong*
Spironolactone >25 mg/day	**Avoid in patients with heart failure or with a CrCl <30 mL/min.** In heart failure, the risk of hyperkalemia is higher in older adults if taking >25 mg/day. *QE = Moderate; SR = Strong*
Central Nervous System	
Tertiary TCAs, alone or in combination: ■ Amitriptyline ■ Chlordiazepoxide-amitriptyline ■ Clomipramine ■ Doxepin >6 mg/day ■ Imipramine ■ Perphenazine-amitriptyline ■ Trimipramine	**Avoid.** Highly anticholinergic, sedating, and cause orthostatic hypotension; the safety profile of low-dose doxepin (≤6 mg/day) is comparable to that of placebo. *QE = High; SR = Strong*
Antipsychotics, first- (conventional) and second- (atypical) generation (see table for full list)	**Avoid use for behavioral problems of dementia unless non-pharmacologic options have failed and patient is threat to self or others.** Increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. *QE = Moderate; SR = Strong*
Thioridazine Mesoridazine	**Avoid.** Highly anticholinergic and greater risk of QT-interval prolongation. *QE = Moderate; SR = Strong*
Barbiturates ■ Amobarbital* ■ Butabarbital* ■ Butalbital ■ Mephobarbital* ■ Pentobarbital* ■ Phenobarbital ■ Secobarbital*	**Avoid.** High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages. *QE = High; SR = Strong*
Benzodiazepines *Short- and intermediate-acting:* ■ Alprazolam ■ Estazolam ■ Lorazepam ■ Oxazepam ■ Temazepam ■ Triazolam *Long-acting:* ■ Chlorazepate ■ Chlordiazepoxide ■ Chlordiazepoxide-amitriptyline ■ Clidinium-chlordiazepoxide ■ Clonazepam ■ Diazepam ■ Flurazepam ■ Quazepam	**Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium.** Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents. In general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents in older adults. May be appropriate for seizure disorders, rapid eye movement sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, periprocedural anesthesia, end-of-life care. *QE = High; SR = Strong*
Chloral hydrate*	**Avoid.** Tolerance occurs within 10 days and risk outweighs the benefits in light of overdose with doses only 3 times the recommended dose. *QE = Low; SR = Strong*
Meprobamate	**Avoid.** High rate of physical dependence; very sedating. *QE = Moderate; SR = Strong*

Table 1 (continued from page 3)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zolpidem ■ Zaleplon	**Avoid chronic use (>90 days)** Benzodiazepine-receptor agonists that have adverse events similar to those of benzodiazepines in older adults (e.g., delirium, falls, fractures); minimal improvement in sleep latency and duration. *QE = Moderate; SR = Strong*
Ergot mesylates* Isoxsuprine*	**Avoid.** Lack of efficacy. *QE = High; SR = Strong*
Endocrine	
Androgens ■ Methyltestosterone* ■ Testosterone	**Avoid unless indicated for moderate to severe hypogonadism.** Potential for cardiac problems and contraindicated in men with prostate cancer. *QE = Moderate; SR = Weak*
Desiccated thyroid	**Avoid.** Concerns about cardiac effects; safer alternatives available. *QE = Low; SR = Strong*
Estrogens with or without progestins	**Avoid oral and topical patch. Topical vaginal cream: Acceptable to use low-dose intravaginal estrogen for the management of dyspareunia, lower urinary tract infections, and other vaginal symptoms.** Evidence of carcinogenic potential (breast and endometrium); lack of cardioprotective effect and cognitive protection in older women. Evidence that vaginal estrogens for treatment of vaginal dryness is safe and effective in women with breast cancer, especially at dosages of estradiol <25 mcg twice weekly. *QE = High (Oral and Patch), Moderate (Topical); SR = Strong (Oral and Patch), Weak (Topical)*
Growth hormone	**Avoid, except as hormone replacement following pituitary gland removal.** Effect on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, impaired fasting glucose. *QE = High; SR = Strong*
Insulin, sliding scale	**Avoid.** Higher risk of hypoglycemia without improvement in hyperglycemia management regardless of care setting. *QE = Moderate; SR = Strong*
Megestrol	**Avoid.** Minimal effect on weight; increases risk of thrombotic events and possibly death in older adults. *QE = Moderate; SR = Strong*
Sulfonylureas, long-duration ■ Chlorpropamide ■ Glyburide	**Avoid.** Chlorpropamide: prolonged half-life in older adults; can cause prolonged hypoglycemia; causes SIADH Glyburide: higher risk of severe prolonged hypoglycemia in older adults. *QE = High; SR = Strong*
Gastrointestinal	
Metoclopramide	**Avoid, unless for gastroparesis.** Can cause extrapyramidal effects including tardive dyskinesia; risk may be further increased in frail older adults. *QE = Moderate; SR = Strong*
Mineral oil, given orally	**Avoid.** Potential for aspiration and adverse effects; safer alternatives available. *QE = Moderate; SR = Strong*
Trimethobenzamide	**Avoid.** One of the least effective antiemetic drugs; can cause extrapyramidal adverse effects. *QE = Moderate; SR = Strong*

American Geriatrics Society Beers Criteria 2012 (continued)

Table 1 (continued from page 4)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Pain Medications	
Meperidine	**Avoid.** Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available. *QE = High; SR = Strong*
Non-COX-selective NSAIDs, oral ■ Aspirin >325 mg/day ■ Diclofenac ■ Diflunisal ■ Etodolac ■ Fenoprofen ■ Ibuprofen ■ Ketoprofen ■ Meclofenamate ■ Mefenamic acid ■ Meloxicam ■ Nabumetone ■ Naproxen ■ Oxaprozin ■ Piroxicam ■ Sulindac ■ Tolmetin	**Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups, including those ≥75 years old or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months, and in about 2%–4% of patients treated for 1 year. These trends continue with longer duration of use. *QE = Moderate; SR = Strong*
Indomethacin Ketorolac, includes parenteral	**Avoid.** Increases risk of GI bleeding/peptic ulcer disease in high-risk groups *(See Non-COX selective NSAIDs)* Of all the NSAIDs, indomethacin has most adverse effects. *QE = Moderate (Indomethacin), High (Ketorolac); SR = Strong*
Pentazocine[1]	**Avoid.** Opioid analgesic that causes CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs; is also a mixed agonist and antagonist; safer alternatives available. *QE = Low; SR = Strong*
Skeletal muscle relaxants ■ Carisoprodol ■ Chlorzoxazone ■ Cyclobenzaprine ■ Metaxalone ■ Methocarbamol ■ Orphenadrine	**Avoid.** Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at dosages tolerated by older adults is questionable. *QE = Moderate; SR = Strong*

[1]Infrequently used drugs. Table 1 Abbreviations: ACEI, angiotensin converting-enzyme inhibitors; ARB, angiotensin receptor blockers; CNS, central nervous system; COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Cardiovascular		
Heart failure	NSAIDs and COX-2 inhibitors Nondihydropyridine CCBs (avoid only for systolic heart failure) ■ Diltiazem ■ Verapamil Pioglitazone, rosiglitazone Cilostazol Dronedarone	**Avoid.** Potential to promote fluid retention and/or exacerbate heart failure. *QE = Moderate (NSAIDs, CCBs, Dronedarone), High (Thiazolidinediones (glitazones)), Low (Cilostazol); SR = Strong*

Table 2 (continued from page 5)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers ■ Doxazosin ■ Prazosin ■ Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	**Avoid.** Increases risk of orthostatic hypotension or bradycardia. *QE = High (Alpha blockers), Moderate (AChEIs, TCAs and antipsychotics); SR = Strong (AChEIs and TCAs), Weak (Alpha blockers and antipsychotics)*
Central Nervous System		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	**Avoid.** Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. *QE = Moderate; SR = Strong*
Delirium	All TCAs Anticholinergics *(see online for full list)* Benzodiazepines Chlorpromazine Corticosteroids H_2-receptor antagonist Meperidine Sedative hypnotics Thioridazine	**Avoid.** Avoid in older adults with or at high risk of delirium because of inducing or worsening delirium in older adults; if discontinuing drugs used chronically, taper to avoid withdrawal symptoms. *QE = Moderate; SR = Strong*
Dementia & cognitive impairment	Anticholinergics *(see online for full list)* Benzodiazepines H_2-receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	**Avoid.** Avoid due to adverse CNS effects. Avoid antipsychotics for behavioral problems of dementia unless non-pharmacologic options have failed and patient is a threat to themselves or others. Antipsychotics are associated with an increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. *QE = High; SR = Strong*
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zaleplon ■ Zolpidem TCAs/SSRIs	**Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure.** Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines are not safer than long-acting ones. *QE = High; SR = Strong*
Insomnia	Oral decongestants ■ Pseudoephedrine ■ Phenylephrine Stimulants ■ Amphetamine ■ Methylphenidate ■ Pemoline Theobromines ■ Theophylline ■ Caffeine	**Avoid.** CNS stimulant effects. *QE = Moderate; SR = Strong*
Parkinson's disease	All antipsychotics (see online publication for full list, except for quetiapine and clozapine) Antiemetics ■ Metoclopramide ■ Prochlorperazine ■ Promethazine	**Avoid.** Dopamine receptor antagonists with potential to worsen parkinsonian symptoms. Quetiapine and clozapine appear to be less likely to precipitate worsening of Parkinson disease. *QE = Moderate; SR = Strong*

American Geriatrics Society Beers Criteria 2012 (continued)

Table 2 (continued from page 6)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Gastrointestinal		
Chronic constipation	Oral antimuscarinics for urinary incontinence ■ Darifenacin ■ Fesoterodine ■ Oxybutynin (oral) ■ Solifenacin ■ Tolterodine ■ Trospium Nondihydropyridine CCB ■ Diltiazem ■ Verapamil First-generation antihistamines as single agent or part of combination products ■ Brompheniramine (various) ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine (various) ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine (various) ■ Diphenhydramine ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine Anticholinergics/antispasmodics *(see online for full list of drugs with strong anticholinergic properties)* ■ Antipsychotics ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine ■ Tertiary TCAs (amitriptyline, clomipramine, doxepin, imipramine, and trimipramine)	**Avoid unless no other alternatives.** Can worsen constipation; agents for urinary incontinence: antimuscarinics overall differ in incidence of constipation; response variable; consider alternative agent if constipation develops. *QE = High (For Urinary Incontinence), Moderate/Low (All Others); SR = Strong*
History of gastric or duodenal ulcers	Aspirin (>325 mg/day) Non–COX-2 selective NSAIDs	**Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).** May exacerbate existing ulcers or cause new/additional ulcers. *QE = Moderate; SR = Strong*
Kidney/Urinary Tract		
Chronic kidney disease stages IV and V	NSAIDs Triamterene (alone or in combination)	**Avoid.** May increase risk of kidney injury. May increase risk of acute kidney injury. *QE = Moderate (NSAIDs), Low (Triamterene); SR = Strong (NSAIDs), Weak (Triamterene)*
Urinary incontinence (all types) in women	Estrogen oral and transdermal (excludes intravaginal estrogen)	**Avoid in women.** Aggravation of incontinence. *QE = High; SR = Strong*

Table 2 (continued from page 7)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Lower urinary tract symptoms, benign prostatic hyperplasia	Inhaled anticholinergic agents Strongly anticholinergic drugs, except antimuscarinics for urinary incontinence (see Table 9 for complete list).	**Avoid in men.** May decrease urinary flow and cause urinary retention. *QE = Moderate; SR = Strong (Inhaled agents), Weak (All others)*
Stress or mixed urinary incontinence	Alpha-blockers ■ Doxazosin ■ Prazosin ■ Terazosin	**Avoid in women.** Aggravation of incontinence. *QE = Moderate; SR = Strong*

Table 2 Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SR, Strength of Recommendation; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, *Quality of Evidence (QE) & Strength of Recommendation (SR)*
Aspirin for primary prevention of cardiac events	**Use with caution in adults ≥80 years old.** Lack of evidence of benefit versus risk in individuals ≥80 years old. *QE = Low; SR = Weak*
Dabigatran	**Use with caution in adults ≥75 years old or if CrCl <30 mL/min.** Increased risk of bleeding compared with warfarin in adults ≥75 years old; lack of evidence for efficacy and safety in patients with CrCl <30 mL/min *QE = Moderate; SR = Weak*
Prasugrel	**Use with caution in adults ≥75 years old.** Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes). *QE = Moderate; SR = Weak*
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	**Use with caution.** May exacerbate or cause SIADH or hyponatremia; need to monitor sodium level closely when starting or changing dosages in older adults due to increased risk. *QE = Moderate; SR = Strong*
Vasodilators	**Use with caution.** May exacerbate episodes of syncope in individuals with history of syncope. *QE = Moderate; SR = Weak*

Table 3 Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin–norepinephrine reuptake inhibitors; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

Geriatric Fall Assessment

Background: Trauma is one of the leading causes of death in the geriatric population. Falls, even relatively minor impact falls, often represent a major traumatic mechanism in the geriatric population and can lead to significant morbidity and mortality compared to younger patients. As the population continues to age these falls will continue to increase disproportionately to other age groups. In fact, over a five-year period between 2005 and 2009, fall-related visits to the ED increased approximately 37.5%.[119] These falls are increasingly common, occurring in up to 1/3 of the population over 65 years old and surge to 51% in those older than 85.[120] Furthermore, the financial burden of fall-related injuries and hospitalizations are estimated to be more than 28 billion dollars each year.[120-123]

The appropriate evaluation of a patient who either has fallen or is at high risk of falling involves not only a thorough assessment for traumatic injuries, but an assessment of the cause of the fall and an estimation of future fall risk. This assessment is often a complex and time-consuming evaluation and usually involves a multifaceted and multi-disciplined approach. For those geriatric patients who present to the ED after a fall, traumatic injuries may be "occult," presenting without "classic" signs or symptoms. High-risk injuries such as blunt head trauma, spinal fractures and hip fractures warrant a higher degree of suspicion and extensive workups.[124-127] Furthermore, the cause of the fall is often multifactorial, resulting from a complex combination of causes, described as the "geriatric syndrome."

The goal of the evaluation of a patient who has fallen or is at increased risk of falling is therefore to diagnose and treat traumatic injuries, discover and manage the predisposing causes of the fall, and ultimately to prevent complications of falling and future falls. Unfortunately, predicting future falls in geriatric ED patients is challenging. [128]The ED plays a critical role in initiating appropriate evaluation, disposition, and follow up in order to meet these goals.[129-131] However, in spite of this safety-net position within the health care system, few fall assessments are initiated appropriately from the ED.[132] Studies have shown that having appropriate policies and procedures in place can play a pivotal role in increasing the detection of at-risk seniors and possibly prevent future falls and injuries.[133, 134]

Policy: It is the policy of the Geriatric ED to initiate a comprehensive evaluation for geriatric patients presenting after a fall or for those who may be at high risk for a future fall. Patients will be evaluated for injuries, including those injuries that may be "occult" in the geriatric population. Furthermore, patients will be evaluated for causes of and risk factors for falls. Patients will be assessed prior to disposition for safety with the goal to prevent further injury and falls.

Required Resources:

- Fall risk assessment tool: Although many hospitals have a comprehensive fall assessment tool for in-patients, these are often not appropriate for implementation in the ED setting.[135, 136] An appropriate tool is a direct, easily implemented tool to screen for risk of falls. Specific policies and procedures should be in place for the assessment and evaluation of patients presenting to the ED with a high risk of fall or those who have suffered a fall. Assessment should include both intrinsic and extrinsic risk factors for falls.
- Radiology imaging protocols focused on the special evaluation of the geriatric population.[137]
- A multi-disciplinary team including PT/OT, social work, nursing, physician and "mid-level" providers (where appropriate) is recommended.
- In order to better facilitate the care of seniors, EDs should make an effort to align their physical and personnel resources with the physical needs of the geriatric patient. Several elements have been suggested as possible interventions for the prevention of fall within the ED.[7]
- Equipment to prevent falls in the ED should include:

- Rubber or nonskid flood surfaces/mats
- Even floor surfaces
- Handrails on walls and hallways
- Aisle lighting
- Bedside commodes and grab bars in restrooms
- Bedrails properly positioned and functioning
- Patient gown and hospital clothing that minimize fall risk (long, baggy, loose tie strings, etc)

- Expedited outpatient follow-up for those patients discharged from the ED/hospital to include home safety assessments is recommended.
- Walkers and other gait assistance devices should be available for patients on discharge.

Procedure: All geriatric patients presenting after a fall will be assessed by the attending physician. Although the cause of the fall may be straightforward, a thoughtful assessment begins by answering the question "if this patient was a healthy 20-year-old, would he/she have fallen?" If the answer is "no," then an assessment of the underlying cause of the fall should be more comprehensive and should include:

- History is the most critical component of the evaluation of a patient with or at risk for a fall. Several studies and authorities have suggested that there are several key elements to an appropriate history in the patients with a fall.[121, 138-144] These key historical elements are as follows:
  - Age greater than 65
  - Location and cause of fall
  - Difficulty with gait and/or balance
  - Falls in the previous (XX time)
  - Time spent on floor or ground
  - Loss of Consciousness/AMS
  - Near/syncope/orthostasis
  - Melena
  - Specific comorbidities such as dementia, Parkinson's, stroke, diabetes, hip fracture and depression
  - Visual or neurological impairments such peripheral neuropathies
  - Alcohol use
  - Medications
  - Activities of daily living
  - Appropriate foot wear
- Medication assessment should be performed on all patients at risk or who have suffered from a fall. Special attention should be to those patients currently taking any of the following classes of medications: vasodilators, diuretics, antipsychotics sedative/hypnotics, and other high-risk medications.[114]
- Orthostatic blood pressure assessment
- Neurologic assessment with special attention to presence/absence of neuropathies and proximal motor strength
- Although there is no recommended set of diagnostic tests for the cause of a fall, a threshold should be maintained for obtaining an EKG, complete blood count, standard electrolyte panel, measurable medication levels and appropriate imaging.
- Evaluation of the patient for injury should include a complete head to toe evaluation for ALL patients, including those presenting with seemingly isolated injuries.
- Safety assessment prior to discharge should include an evaluation of gait, and a "get up and go test" (reference). Patients not able to rise from the bed, turn, and steadily ambulate out of the ED should be reassessed. Admission should be considered if patient safety cannot be assured.
- All patients admitted to the hospital after a fall will be evaluated by PT/OT.

Performance Improvement:
Home assessments for safety for all patients evaluated for a fall.[145, 146]

Delirium and Dementia in the Geriatric Emergency Department

Background: Delirium and agitation are among the most common problems in the geriatric adult, occurring in approximately 25% of hospitalized geriatric patients.[147, 148] Consequences of delirium include increased mortality, morbidity, extended hospital length-of-stay, increased need for restraints and/or added staffing (sitters), and increased potential for lasting functional decline and subsequent need for nursing home placement.[149, 150]

The ED is challenged with providing a comprehensive, thoughtful evaluation of patients presenting with delirium.[51, 151-153] One issue is that dementia and mild cognitive impairment are common in geriatric ED patients and often undetected.[52, 152, 154] Routine cognitive screening and documentation provides a formal assessment of mental status at the index ED evaluation, but also provides a baseline for future ED visits. Several dementia screening instruments have been validated in ED settings.[155] When done well, this assessment can lead to directed interventions that can positively affect the duration of the patient's hospitalization. The features that distinguish dementia and delirium are presented in the Table. Often the cause of a delirium is multifactorial, including acute medical illness overlying baseline cognitive dysfunction, medication effects and interactions, and decompensating co- morbidities. An appropriate evaluation and management of each of these factors is critical to a positive outcome.[156]

Another challenge for the ED is the effective management of agitated geriatric patients. Medications and restraints (both chemical and physical) are critical interventions that, when used well, can improve patient health and safety, but when used inappropriately can actually increase the severity or length of a delirium. Fundamentally, the treatment of the geriatric patient with this concern is very different from that of a younger patient with similar concerns.

Policy: It is the policy of the Geriatric ED to comprehensively evaluate geriatric adults presenting with delirium, encephalopathy, or an altered mental status. Coordination of care, with special attention to directing interventions towards improving reversible causes and limiting factors that extend or cause delirium is the main goal.

It is the policy of the Geriatric ED to limit the use of chemical and physical restraints to only those situations in which they are absolutely necessary. Appropriate use of medications and alternative safety measures will be maximized to manage the agitated geriatric patient.[156]

Procedure:
Validated screening tools will be used to identify patients presenting with dementia and delirium. The assessment for delirium will use a two-step process. Step 1 (Figure 4) is the highly sensitive delirium triage screen. Step 2 is the highly specific Brief Confusion Assessment Method.[157] A variety of ED-appropriate dementia and mild cognitive impairment screening instruments have been validated, but all are most useful to reduce the probability of non-delirium cognitive impairment (dementia or mild cognitive impairment) rather than to rule-in the diagnosis. An assessment for dementia should be conducted after delirium screening. One of the most accurate dementia screening instruments is reproduced below in Figure 5.[155, 158]

Figure 4. Delirium Screening Instruments

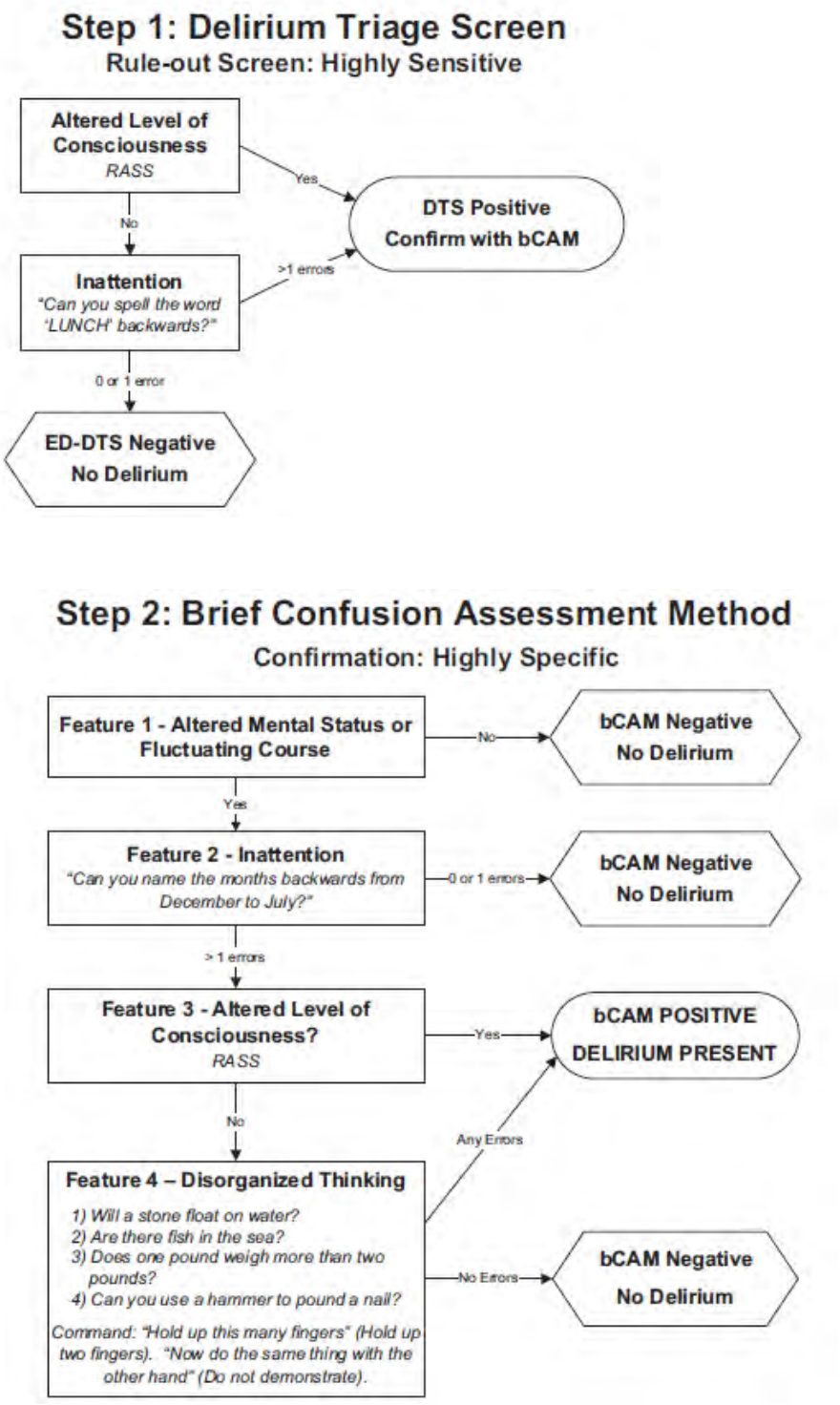


Figure 5. The Short Blessed Test (SBT) for ED Dementia Screening

Adapted from Katzman R, Brown T, Fuld P, et al. Validation of a short orientation-memory-concentration test of cognitive impairment. *Am J Psychiatry*. 1983;140(6):734-739.

Instructions to the patient: "Now I would like to ask you some questions to check your memory and concentration. Some of them may be easy and some of them may be hard."

		Correct	Incorrect
1)	What year is it now? _____	**(0)**	**(1)**
2)	What month is this? _____	**(0)**	**(1)**

Please repeat this name and address after me:
John Brown, 42 Market Street, Chicago
John Brown, 42 Market Street, Chicago
John Brown, 42 Market Street, Chicago

(underline words repeated correctly in each trial)
Trials to learning ____ (if unable to do in 3 trials = C)

3) Without looking at your watch or the clock, tell me what time it is.
(If response is vague, prompt for specific response)

	Correct	Incorrect
(within 1-hour) _____		
Actual time: _____	**(0)**	**(1)**

4) Count aloud backwards from 20 to 1 **0 1 2 Errors**

(mark correctly sequenced numerals)
If subject starts counting forward or forgets the task, repeat instructions and score one error.

20 19 18 17 16 15 14 13 12 11
10 9 8 7 6 5 4 3 2 1

5) Say the months of the year in reverse order.
If the tester needs to prompt with the last name of the month of the year, one error should be scored.
(Mark correctly sequenced months.)

D N O S A JL JN MY AP MR F J **0 1 2 Errors**

6) Repeat the name and address you were asked to remember.

(John Brown, 42 Market Street, Chicago) **0 1 2 3 4 5 Errors**
_____, ____, ___, _____, _____

Scoring the Short Blessed Test

Item #	Errors (0-5)	Weighting Factor	Final Item Score
1		x 4	
2		x 3	
3		x 3	
4		x 2	
5		x 2	
6		x 2	
			Sum Total = _____ (Range 0-28)

0-4 Normal Cognition
5-9 Questionable Impairment
≥ 10 Impairment consistent with dementia

The evaluation of a mental status change should begin with an understanding of the difference between a delirium and a progression of an underlying dementia.

The following criteria can be helpful to diagnose an acute delirium:

TABLE: Distinguishing Features Between Delirium and Dementia

Feature	Delirium	Dementia
Onset	Acute	Insidious
Course	Fluctuating	Constant
Attention	Disordered	Generally Preserved*
Consciousness	Disordered	Generally Preserved*
Hallucinations	Often Present	Generally Absent*

* = Variable in Advanced Dementia

- As mental status changes may wax and wane, delirium screening will be reevaluated on a regular basis.
- Upon diagnosis of an acute delirium, attention will be paid to underlying causes including, but not limited to:
  - Infections
    - UTI, pneumonia most commonly
  - Medications
    - Anti-cholinergic medications
    - Sedative/hypnotics
    - Narcotics
    - Any new medication, especially if multiple medications have been recently added
  - Electrolyte imbalances
  - Alcohol/drug use or withdrawal
  - New focal neurologic findings should guide an evaluation for stroke syndromes

- Any geriatric patient being admitted to the hospital, regardless of primary diagnosis, should be evaluated for the presence/absence of the following risk factors for the development of a delirium while hospitalized:
  - Decreased vision or hearing
  - Decreased cognitive ability
  - Severe illness
  - Dehydration/pre-renal azotemia

    *The presence of 1-2 factors increases the risk of inpatient delirium by 2.5x, the presence of 3-4 factors increases the risk of inpatient delirium by >9x.
- Patients presenting with agitated delirium should be managed in a manner that improves safety and decreases the likelihood of injury. A therapeutic environment should be provided whenever possible. Preventative measures should include:
  - Eliminate or minimize identified risk factors
  - Avoid high-risk medications
  - Prevent/promptly and appropriately treat infections
  - Prevent/promptly treat dehydration and electrolyte disturbances.
  - Provide adequate pain control
  - Maximize oxygen delivery (supplemental oxygen, blood, and BP support as needed).
  - Use sensory aids as appropriate.
  - Foster orientation: frequently reassure and reorient patient (unless patient becomes agitated); use easily visible calendars, clocks, caregiver identification; carefully explain all activities; communicate clearly
  - Regulate bowel/bladder function.
  - Provide adequate nutrition
  - Increase supervised mobility
  - Increase awareness and vision whenever possible.
  - The use of restraints should be minimized whenever possible.
  - Chemical restraint/sedation should be minimized whenever possible.
    - When necessary, haloperidol is recommended over lorazepam for acute treatment.
  - Provide appropriate sensory stimulation: quiet room; adequate light; one task at a time; noise-reduction strategies
  - Foster familiarity: encourage family/friends to stay at bedside; bring familiar objects from home; maintain consistency of caregivers; minimize relocations
  - Communicate clearly, provide explanations
  - Reassure and educate family
  - Minimize invasive interventions

Recommended Resources:

- Sitters
- Dry erase boards and markers to increase communication and orientation

Performance Improvement:

- Physical restraint utilization hours/days
- Use of benzodiazepines in geriatric patients with agitated delirium
- Utilization rates of orientation techniques including dry erase boards

Palliative Care in the Geriatric ED

Background: The provision of appropriate end-of-life care in the geriatric population is essential to a

successful Geriatric ED program.[74, 78, 159] The ED will provide access to palliative care and end-of-life care for medically complex patients in the Geriatric ED. By providing multidisciplinary teams for palliative care interventions, recent literature suggests this will improve quality of life,[160] reduce hospital length of stay [161] and ED recidivism,[162] improve patient and family satisfaction,[163] result in less utilization of intensive care,[164] and provide significant cost savings.[164, 165]

Policy: It is the policy of the Geriatric ED to recognize the role of palliative and end-of-life care. This includes several aspects of emergency practice already in place such as symptom management and discussion of critical decisions with family/caregivers.

Required Resources:

- Establish clinical protocol to identify ED patients who might benefit from palliative interventions
  - Pain management
  - Non-pain symptom management
  - Comfort care
  - Coordination of in-house palliative care team

REFERENCES

1. Roberts DC, McKay MP, Shaffer A. Increasing rates of emergency department visits for elderly patients in the United States, 1993 to 2003. *Ann Emerg Med*. 2008 51: 769-774.
2. Pines JM, Mullins PM, Cooper JK, et al. National trends in emergency department use, care patterns, and quality of care of older adults in the United States. *J Am Geriatr Soc*. 2013;61: 12-17.
3. Schumacher JG, Deimling GT, Meldon S, et al. Older adults in the Emergency Department: predicting physicians' burden levels. *J Emerg Med*. 2006;30: 455-460.
4. Samaras N, Chevalley T, Samaras D, et al. Older patients in the emergency department: a review. *Ann Emerg Med*. 2010;56: 261-269.
5. Hogan TM, Olade TO, Carpenter CR. A profile of acute care in an aging America: snowball sample identification and characterization of United States geriatric emergency departments in 2013. *Acad Emerg Med*. 2013 (in press).
6. Adams JG, Gerson LW. A new model for emergency care of geriatric patients. *Acad Emerg Med*. 2003;10: 271-274.
7. Hwang U, Morrison RS. The geriatric emergency department. *J Am Geratr Soc*. 2007;55: 1873-1876.
8. Carpenter CR, Platts-Mills TF. Evolving prehospital, emergency department, and "inpatient" management models for geriatric emergencies. *Clin Geriatr Med*. 2013;29: 31-47.
9. Fitzgerald RT. White Paper: The Future of Geriatric Care in Our Nation's Emergency Departments: Impact and Implications. in. Dallas TX, American College of Emergency Physicians; 2008.
10. Jayadevappa R. Quality of Emergency Department Care for Elderly. *Emerg Med*. 2011;1: e107.
11. Ryan D, Liu B, Awad M, et al. Improving older patients' experience in the emergency room: the senior-friendly emergency room. *Aging Health*. 2011;7: 901-909.
12. Banerjee B, Conroy S, Cooke MW. Quality care for older people with urgent and emergency care needs in UK emergency departments. *Emerg Med J*. 2013;30: 699-700.
13. Banarjee J, Conroy S, O'Leary V, et al. Quality care for older people with urgent and emergency care needs. in., British Geriatrics Society; 2011:102.
14. McNamara RM, Rousseau E, Sanders AB. Geriatric Emergency Medicine: A Survey of Practicing Emergency Physicians. *Ann Emerg Med*. 1992;21: 796-801.
15. Baum SA, Rubenstein LZ. Old people in the emergency room: age-related differences in emergency department use and care. *J Am Geriatr Soc*. 1987;35: 398-404.

16. Singal BM, Hedges JR, Rousseau EW, et al. Geriatric patient emergency visits. Part I: Comparison of visits by geriatric and younger patients. *Ann Emerg Med*. 1992;21: 802-807.
17. Strange GR, Chen EH, Sanders AB. Use of emergency departments by elderly patients: projections from a multicenter data base. *Ann Emerg Med*. 1992;21: 819-824.
18. Strange GR, Chen EH. Use of emergency departments by elder patients: a five-year follow-up study. *Acad Emerg Med*. 1998;5: 1157-1162.
19. Hedges JR, Singal BM, Rousseau EW, et al. Geriatric patient emergency visits. Part II: Perceptions of visits by geriatric and younger patients. *Ann Emerg Med*. 1992;21: 808-813.
20. Gruneir A, Silver MJ, Rochon PA. Emergency department use by older adults: a literature review on trends, appropriateness, and consequences of unmet health care needs. *Med Care Res Rev*. 2011;68: 131-155.
21. Schnitker L, Martin-Khan M, Beattie E, et al. Negative health outcomes and adverse events in older people attending emergency departments: A systematic review. *Australasian Emerg Nurs J*. 2011;14: 141-162.
22. Wilber ST, Gerson LW, Terrell KM, et al. Geriatric emergency medicine and the 2006 Institute of Medicine reports from the Committee on the Future of Emergency Care in the U.S. Health System. *Acad Emerg Med*. 2006;13: 1345-1351.
23. Hogan TM, Losman ED, Carpenter CR, et al. Development of geriatric competencies for emergency medicine residents using an expert consensus process. *Acad Emerg Med* 2010;17: 316-324.
24. Carpenter CR, Gerson L. Geriatric emergency medicine. in: LoCicero J, Rosenthal RA, Katic M, et al. eds. *A Supplment to New Frontiers in Geriatrics Research: An Agenda for Surgical and Related Medical Specialties*. 2nd ed. New York, The American Geriatrics Society; 2008:45-71.
25. Carpenter CR, Heard K, Wilber ST, et al. Research priorities for high-quality geriatric emergency care: medication management, screening, and prevention and functional assessment. *Acad Emerg Med*. 2011;18: 644-654.
26. Carpenter CR, Shah MN, Hustey FM, et al. High yield research opportunities in geriatric emergency medicine research: prehospital care, delirium, adverse drug events, and falls. *J Gerontol Med Sci*. 2011;66: 775-783.
27. Terrell KM, Hustey FM, Hwang U, et al. Quality indicators for geriatric emergency care. *Acad Emerg Med*. 2009 16: 441-449.
28. Inouye SK, Studenski S, Tinetti ME, et al. Geriatric syndromes: clinical, research, and policy implications of a core geriatric concept. *J Am Geratr Soc*. 2007;55: 780-791.
29. Carpenter CR, Griffey RT, Stark S, et al. Physician and Nurse Acceptance of Geriatric Technicians to Screen for Geriatric Syndromes in the Emergency Department. *West J Emerg Med*. 2011;12: 489-495.
30. Pena ME, Snyder BL. Pediatric emergency medicine. The history of a growing discipline. *Emerg Med Clin North Am*. 1995;13: 235-253.
31. Cales RH, Trunkey DD. Preventable trauma deaths. A review of trauma care systems development. *JAMA*. 1985;254: 1059-1063.
32. Adams R, Acker J, Alberts M, et al. Recommendations for improving the quality of care through stroke centers and systems: an examination of stroke center identification options: multidisciplinary consensus recommendations from the Advisory Working Group on Stroke Center Identification Options of the American Stroke Association. *Stroke*. 2002;33: e1-e7.
33. Wilber ST, Blanda M, Gerson LW, et al. Short-term functional decline and service use in older emergency department patients with blunt injuries. *Acad Emerg Med*. 2010;17: 679-686.
34. Sirois MJ, Emond M, Ouellet MC, et al. Cumulative incidence of functional decline following minor injuries in previously independent older Canadian emergency department patients. *J Am Geriatr Soc*. 2013;61(10):1661-8.
35. Suzman R, Riley MW. Introducing the "oldest old." *Milbank Mem Fund Q Health Soc*. 1985;63: 177-186.

36. Fries BE, Morris JN, Skarupski KA, et al. Accelerated dysfunction among the very oldest-old in nursing homes. *J Gerontol A Biol Sci Med Sci*. 2000;55: M336-M341.
37. World Health Organization: Definition of an older or elderly person World Health Organization web site. Available at: http://www.who.int/healthinfo/survey/ageingdefnolder/en/print.html. Accessed August 30, 2013.
38. McCusker J, Verdon J, Vadeboncoeur A, et al. The elder-friendly emergency department assessment tool: development of a quality assessment tool for emergency department-based geriatric care. *J Am Geriatr Soc*. 2012;60: 1534-1539.
39. Gold S, Bergman H. A geriatric consultation team in the emergency department. *J Am Geriatr Soc*. 1997;45: 764-767.
40. Sinoff G, Clarfield AM, Bergman H, et al. A two-year follow-up of geriatric consults in the emergency department. *J Am Geriatr Soc*. 1998;46: 716-720.
41. Foo CL, Siu VWY, Tan TL, et al. Geriatric assessment and intervention in an emergency department observation unit reduced re-attendance and hospitalisation rates. *Australas J Ageing*. 2012;31: 40-46.
42. Yuen TM, Lee LL, Or IL, et al. Geriatric consultation service in emergency department: how does it work? *Emerg Med J*. 2013;30: 180-185.
43. Sinha SK, Bessman ES, Flomenbaum N, et al. A systematic review and qualitative analysis to inform the development of a new emergency department-based geriatric case management model. *Ann Emerg Med*. 2011;57: 672-682.
44. Creditor MD. Hazards of hospitalization of the elderly. *Ann Intern Med*. 1993;118: 219-223.
45. Brazil K, Bolton C, Ulrichsen D, et al. Substituting home care for hospitalization: the role of a quick response service for the elderly. *J Community Health*. 1998;23: 29-43.
46. Basic D, Conforti DA. A prospective, randomised controlled trial of an aged care nurse intervention within the Emergency Department. *Aust Health Rev*. 2005;29: 51-59.
47. Corbett HM, Lim WK, Davis SJ, et al. Care coordination in the Emergency Department: improving outcomes for older patients. *Aust Health Rev*. 2005;29: 43-50.
48. Hegney D, Buikstra E, Chamberlain C, et al. Nurse discharge planning in the emergency department: a Toowoomba, Australia, study. *J Clin Nurs*. 2006;15: 1033-1044.
49. Engel KG, Heisler M, Smith DM, et al. Patient comprehension of emergency department care and instructions: are patients aware of when they do not understand? *Ann Emerg Med*. 2009;53: 454-461.
50. Baraff LJ, Bernstein E, Bradley K, et al. Perceptions of emergency care by the elderly: results of multicenter focus group interviews. *Ann Emerg Med*. 1992;21: 814-818.
51. Han JH, Bryce SN, Ely EW, et al. The effect of cognitive impairment on the accuracy of the presenting complaint and discharge instruction comprehension in older emergency department patients. *Ann Emerg Med*. 2011;57: 662-671.
52. Carpenter CR, DesPain B, Keeling TK, et al. The Six-Item Screener and AD8 for the detection of cognitive impairment in geriatric emergency department patients. *Ann Emerg Med*. 2011;57: 653-661.
53. Leipzig RM, Granville L, Simpson D, et al. Keeping granny safe on July 1: a consensus on minimum geriatrics competencies for graduating medical students. *Acad Med*. 2009;84: 604-610.
54. Rogers EM. *Diffusion of Innovations*, 5th ed., Dallas, Free Press; 2003.
55. Peterson LK, Fairbanks RJ, Hettinger AZ, et al. Emergency medical service attitudes toward geriatric prehospital care and continuing medical education in geriatrics. *J Am Geriatr Soc*. 2009;57: 530-535.
56. Shah MN, Rajasekaran K, Sheahan WD, et al. The effect of the geriatrics education for emergency medical services training program in a rural community. *J Am Geriatr Soc*. 2008;56: 1134-1139.
57. Shah MN, Swanson PA, Nobay F, et al. A novel internet-based geriatric education program for emergency medical services providers. *J Am Geriatr Soc*. 2012;60: 1749-1754.

58. Sanders AB, Witzke DB, Jones JS, et al. Principles of care and application of the geriatric emergency care model. in: Sanders AB ed. *Emergency Care of the Elder Person*. St. Louis, MO, Beverly-Cracom Publications; 1996:59-93.
59. Jones J, Dougherty J, Cannon L, et al. A geriatrics curriculum for emergency medicine training programs. *Ann Emerg Med*. 1986;15: 1275-1281.
60. Wadman MC, Lyons WL, Hoffman LH, et al. Assessment of a chief complaint-based curriculum for resident education in geriatric emergency medicine. *West J Emerg Med*. 2011;12: 484-488.
61. Meldon SW, Ma OJ, Woolard R. *Geriatric Emergency Medicine*, 1 ed., Dallas, McGraw-Hill Companies, Inc.; 2004.
62. Geriatric Videos American College of Emergency Physicians web site. Available at: http://www.acep.org/Clinical---Practice-Management/Geriatric-Videos/. Accessed September 3, 2013.
63. Prendergast HM, Jurivich D, Edison M, et al. Preparing the front line for the increase in the aging population: geriatric curriculum development for an emergency medicine residency program. *J Emerg Med*. 2010;38: 386-392.
64. Carpenter CR, Stern ME. Emergency orthogeriatrics: concepts and therapeutic alternatives. *Emerg Med Clin North Am*. 2010;28: 927-949.
65. Bonne S, Schuerer DJE. Trauma in the older adult: epidemiology and evolving geriatric trauma principles. *Clin Geriatr Med*. 2013;29: 137-150.
66. Hustey FM, Palmer RM. Portal of Geriatric Online Education (POGOe): Geriatric Emergency Medicine Modules. Available at: http://www.pogoe.org/productid/20457. Accessed September 24, 2013.
67. Biese K, Roberts E, LaMantia MA, et al. Effect of a geriatric curriculum on emergency medicine resident attitudes, knowledge, and decision-making. *Acad Emerg Med*. 2011;18: S92-S96.
68. Biese K, Roberts E, Kizer JS, et al. Portal of Online Geriatric Education (POGOe): Caring for Elderly Patients in the Emergency Department: An interactive lecture series POGOe web site. Available at: http://www.pogoe.org/productid/20964. Accessed September 24, 2013.
69. Akasheh A, Gibbs L, Mosqueda L, et al. Portal of Online Geriatric Education (POGOe): Geriatric Emergency Medicine Online Curriculum (GEM-OC) 5 - ED Workflow and Dispo Decision-Making. Accessed September 24, 2013.
70. Brymer C, Cavanagh P, Denomy E, et al. The effect of a geriatric education program on emergency nurses. *J Emerg Nurs*. 2001;27: 27-32.
71. Désy PM, Prohaska TR. The Geriatric Emergency Nursing Education (GENE) course: an evaluation. *J Emerg Nurs*. 2008;34: 396-402.
72. Fuerst R, Myslinski J. Portal of Online Geriatric Education (POGOe): Delirium in Elderly Emergency Department (ED) Patients Portal of Online Geriatric Education (POGOe) web site. Available at: http://www.pogoe.org/productid/18395. Accessed September 25, 2013.
73. Kessler C, Williams WC, Moustoukas JN, et al. Transitions of care for the geriatric patient in the emergency department. *Clin Geriatr Med*. 2013;29: 49-69.
74. Rosenberg M, Lamba S, Misra S. Palliative medicine and geriatric emergency care: challenges, opportunities, and basic principles. *Clin Geriatr Med*. 2013;29: 1-29.
75. Vandenberg E. Portal of Online Geriatric Education (POGOe): Emergency Care For The Elder With Abdominal Pain Portal of Online Geriatric Education (POGOe) web site. Available at: http://www.pogoe.org/productid/18959. Accessed September 25, 2013.
76. Anderson RS, Hallen SA. Generalized weakness in the geriatric emergency department patient: an approach to initial management. *Clin Geriatr Med*. 2013;29: 91-100.
77. Seymour B, Chijioke R, Patel A, et al. Portal of Online Geriatric Education (POGOe): High fidelity simulations to teach key concepts in emergency department care of the elderly Portal of Online Geriatric Education (POGOe) web site. Available at: http://www.pogoe.org/productid/20973. Accessed September 25, 2013.

78. Rosenberg M, Rosenberg L. An integrated model of palliative care in the emergency department. *West J Emerg Med*. 2013 (in press).
79. Carpenter CR. Geriatric Syndromes. in: Pines JM, Carpenter CR, Raja A, et al. eds. *Evidence-based emergency care: Diagnostic testing and clinical decision rules*. 2nd ed. Oxford, Wiley-Blackwell; 2013.
80. Amini R. Particular emergency department for seniors. *Emerg Med.* 2012;2: e110.
81. Wilber ST, Burger B, Gerson LW, et al. Reclining Chairs Reduce Pain from Gurneys in Older Emergency Department Patients: A Randomized Controlled Trial. *Acad Emerg Med*. 2005;12: 119-123.
82. Reddy M, Gill SS, Rochon PA. Preventing pressure ulcers: a systematic review. *JAMA*. 2006;296: 974-984.
83. Pham B, Teague L, Mahoney J, et al. Early prevention of pressure ulcers among elderly patients admitted through emergency departments: a cost-effectiveness analysis. *Ann Emerg Med*. 2011;58: 468-473.
84. Thies SB, Richardson JK, Demott T, et al. Influence of an irregular surface and low light on the step variability of patients with peripheral neuropathy during level gait. *Gait Posture*. 2005;22: 40-45.
85. Bradley SM, Hernandez CR. Geriatric assistive devices. *Am Fam Physician*. 2011;84: 405-411.
86. Rittgers J, McInerney M, Feldman J. Assisted listening devices removed barriers to communication in the emergency department. *J Am Geriatr Soc*. 2006;54: s72.
87. Zhang JM, Wang P, Yao JX, et al. Music interventions for psychological and physical outcomes in cancer: a systematic review and meta-analysis. *Support Care Cancer*. 2012;20: 3043-3053.
88. Bradt J, Dileo C, Shim M. Music interventions for preoperative anxiety. *Cochrane Database Syst Rev*. 2013;6: CD006908.
89. McCusker J, Bellavance F, Cardin S, et al. Detection of older people at increased risk of adverse health outcomes after an emergency visit: the ISAR screening tool. *J Am Geriatr Soc*. 1999;47: 1229-1237.
90. Moons P, De Ridder K, Geyskens K, et al. Screening for risk of readmission of patients aged 65 years and above after discharge from the emergency department: predictive value of four instruments. *Eur J Emerg Med*. 2007;14: 315-323.
91. Salvi F, Morichi V, Grilli A, et al. Predictive validity of the Identification of Seniors At Risk (ISAR) screening tool in elderly patients presenting to two Italian Emergency Departments. *Aging Clin Exp Res*. 2009;21: 69-75.
92. Buurman BM, van den Berg W, Korevaar JC, et al. Risk for poor outcomes in older patients discharged from an emergency department: feasibility of four screening instruments. *Eur J Emerg Med*. 2011;18: 215-220.
93. Salvi F, Morichi V, Lorenzetti B, et al. Risk stratification of older patients in the emergency department: comparison between the Identification of Seniors at Risk and Triage Risk Screening Tool. *Rejuvenation Res*. 2012;15: 288-294.
94. McCusker J, Dendukuri N, Tousignant P, et al. Rapid Two-stage Emergency Department Intervention for Seniors: Impact on Continuity of Care. *Acad Emerg Med*. 2003;10: 233-243.
95. McCusker CM, Verdon J. Do geriatric interventions reduce emergency department visits? A systematic review. *J Gerontol A Biol Sci Med Sci*. 2006;61: 53-62.
96. Hastings SN, Heflin MT. A Systematic Review of Interventions to Improve Outcomes for Elders Discharged from the Emergency Department. *Acad Emerg Med*. 2005;12: 978-986.
97. Meldon SW, Mion LC, Palmer RM, et al. A Brief Risk-Stratification Tool to Predict Repeat Emergency Department Visits and Hospitalizations in Older Patients Discharged from the Emergency Department. *Acad Emerg Med*. 2003;10: 224-232.
98. Carpenter CR, Stern M, Sanders AB. Caring for the elderly. in: Rowe BH, Lang ES, Brown MD, et al. eds. *Evidence-based Emergency Medicine*. Chichester, UK, Wiley-Blackwell; 2009:260-270.

99. Curns AT, Holman RC, Sejvar JJ, et al. Infectious disease hospitalizations among older adults in the United States from 1990 through 2002. *Arch Intern Med*. 2005;165: 2514-2520.
100. Foxman B. Epidemiology of urinary tract infections: incidence, morbidity, and economic costs. *Dis Mon*. 2003;49: 53-70.
101. Yokoe DS, Mermel LA, Anderson D, et al. A compendium of strategies to prevent healthcare-associated infections in acute care hospitals. *Infect Control Hosp Epidemiol*. 2008;29: S12-S21.
102. Lo E, Nicolle LE, Classen D, et al. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals. *Infect Control Hosp Epidemiol*. 2008;29: S41-S50.
103. Saint S, Meddings JA, Calfee DP, et al. Catheter-associated urinary tract infection and the Medicare rule changes. *Ann Intern Med*. 2009;150: 877-884.
104. Hooten TM, Bradley SF, Cardenas DD, et al. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis*. 2010;50: 625-663.
105. Apisarnthanarak A, Rutjanawech S, Wichansawakun S, et al. Initial inappropriate urinary catheters use in a tertiary-care center: incidence, risk factors, and outcomes. *Am J Infect Control*. 2007;35: 594-599.
106. Raffaele G, Bianco A, Aiello M, et al. Appropriateness of use of indwelling urinary tract catheters in hospitalized patients in Italy. *Infect Control Hosp Epidemiol*. 2008;29: 279-281.
107. Munasinghe RL, Yazdani H, Siddique M, et al. Appropriateness of use of indwelling urinary catheters in patients admitted to the medical service. *Infect Control Hosp Epidemiol*. 2001;22: 647-649.
108. Saint S, Kowalski CP, Kaufman SR, et al. Preventing hospital-acquired urinary tract infection in the United States: a national study. *Clin Infect Dis*. 2008;46: 243-250.
109. Saint S, Greene MT, Kowalski CP, et al. Preventing catheter-associated urinary tract infection in the United States: a national comparative study. *JAMA Intern Med*. 2013;173: 874-879.
110. Gould CV, Umscheid CA, Agarwal RK, et al. Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol*. 2010;31: 319-326.
111. Centers for Disease Control and Prevention Healthcare-associated Infections (HAIs) Centers for Disease Control and Prevention web site. Available at: http://www.cdc.gov/HAI/ca_uti/uti.html. Accessed September 6, 2013.
112. Hohl CM, Dankoff J, Colacone A, et al. Polypharmacy, Adverse Drug-Related Events, and Potential Adverse Drug Interactions in Elderly Patients Presenting to an Emergency Department. *Ann Emerg Med*. 2001;38: 666-671.
113. Hustey FM, Wallis N, Miller J. Inappropriate prescribing in an older ED population. *Am J Emerg Med*. 2007;25: 804-807.
114. American Geriatrics Society 2012 Beers Criteria Update Expert Panel, American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012;60: 616-631.
115. Budnitz DS, Shehab N, Kegler SR, et al. Medication use leading to emergency department visits for adverse drug events in older adults. *Ann Intern Med*. 2007;147: 755-765.
116. Gurwitz JH, Field TS, Harrold LR, et al. Incidence and preventability of adverse drug events among older persons in the ambulatory setting. *JAMA*. 2003;289: 1107-1116.
117. Howard RL, Avery AJ, Slavenburg S, et al. Which drugs cause preventable admissions to hospital? A systematic review. *Br J Clin Pharmacol*. 2007;63: 136-147.
118. Laroche ML, Charmes JP, Nouaille Y, et al. Is inappropriate medication use a major cause of adverse drug reactions in the elderly? *Br J Clin Pharmacol*. 2007;63: 177-186.
119. Falls Among Older Adults: An Overview Centers for Disease Control web site. Available at: http://www.cdc.gov/HomeandRecreationalSafety/Falls/adultfalls.html. Accessed August 30, 2013.
120. Hartholt KA, Stevens JA, Polinder S, et al. Increase in fall-related hospitalizations in the United States, 2001-2008. *J Trauma*. 2011;71 255-258.

121. Baraff LJ, Della Penna R, Williams N, et al. Practice guideline for the ED management of falls in community-dwelling elderly persons. Kaiser Permanente Medical Group. *Ann Emerg Med*. 1997;30: 480-492.
122. Roudsari BS, Ebel BE, Corso PS, et al. The acute medical care costs of fall-related injuries among the U.S. older adults. *Injury*. 2005;36: 1316-1322.
123. Stevens JA, Corso PS, Finkelstein EA, et al. The costs of fatal and non-fatal falls among older adults. *Inj Prev*. 2006;12: 290-295.
124. Sterling DA OCJ, Bonadies J. Geriatric falls: injury severity is high and disproportionate to mechanism. *J Trauma*. 2001;50: 116-119.
125. Lowery DW, Wald MM, Browne BJ, et al. Epidemiology of cervical spine injury victims. *Ann Emerg Med*. 2001;38: 12-16.
126. Rathlev NK, Medzon R, Lowery D, et al. Intracranial pathology in elders with blunt head trauma. *Acad Emerg Med*. 2006;13: 302-307.
127. Guss DA. Hip fracture presenting as isolated knee pain. *Ann Emerg Med*. 1997;29: 418-420.
128. Carpenter CR, Scheatzle MD, D'Antonio JA, et al. Identification of fall risk factors in older adult emergency department patients. *Acad Emerg Med*. 2009;16: 211-219.
129. Bloch F, Jegou D, Dhainaut JF, et al. Do ED staffs have a role to play in the prevention of repeat falls in elderly patients? *Am J Emerg Med*. 2009;27: 303-307.
130. Davison J, Bond J, Dawson P, et al. Patients with recurrent falls attending Accident & Emergency benefit from multifactorial intervention--a randomised controlled trial. *Age Ageing*. 2005;34: 162-168.
131. Rubenstein LZ, Solomon DH, Roth CP, et al. Detection and management of falls and instability in vulnerable elders by community physicians. *J Am Geriatr Soc*. 2004;52: 1527-1531.
132. Donaldson MG, Khan KM, Davis JC, et al. Emergency department fall-related presentations do not trigger fall risk assessment: A gap in care of high-risk outpatient fallers. *Arch Gerontol Geriatr*. 2005;41: 311-317.
133. Tinetti ME, Baker DI, King M, et al. Effect of dissemination of evidence in reducing injuries from falls. *N Engl J Med*. 2008;359: 252-261.
134. Wiegand JV, Gerson LW. Preventive care in the emergency department: should emergency departments institute a falls prevention program for elder patients? A systematic review. *Acad Emerg Med*. 2001;8: 823-826.
135. Oliver D, Daly F, Martin FC, et al. Risk factors and risk assessment tools for falls in hospital in-patients: a systematic review. *Age Ageing*. 2004;33: 122-130.
136. Carpenter CR. Evidence Based Emergency Medicine/Rational Clinical Examination Abstract: Will my patient fall? *Ann Emerg Med*. 2009;53: 398-400.
137. Stiell IG, Clement CM, McKnight RD, et al. The Canadian c-spine rule versus the NEXUS low-risk criteria in patients with trauma. *N Engl J Med*. 2003;349: 2510-2518.
138. Ashburn A, Hyndman D, Pickering R, et al. Predicting people with stroke at risk of falls. *Age Ageing*. 2008;37: 270-276.
139. Kulmala J, Viljanen A, Sipilä S, et al. Poor vision accompanied with other sensory impairments as a predictor of falls in older women. *Age Ageing*. 2009;38: 162-167.
140. Hanlon JT, Boudreau RM, Roumani YF, et al. Number and dosage of central nervous system medications on recurrent falls in community elders: the Health, Aging and Body Composition study. *J Gerontol A Biol Sci Med Sci*. 2009;64: 492-498.
141. Kelly KD, Pickett W, Yiannakoulias N, et al. Medication use and falls in community-dwelling older persons. *Age Ageing*. 2003;32: 503-509.
142. Moreland JD, Richardson JA, Goldsmith CH, et al. Muscle weakness and falls in older adults: a systematic review and meta-analysis. *J Am Geriatr Soc*. 2004;52: 1121-1129.
143. Hartikainen S, Lonnroos E, Louhivuori K. Medication as a risk factor for falls: critical systematic review. *J Gerontol A Biol Sci Med Sci*. 2007;62: 1172-1181.

144. Perell KL, Nelson A, Goldman RL. Fall risk assessment measures: an analytic review. *J Geront Med Sci*. 2001;56A: M761-M766.
145. Clemson L, MacKenzie L, Ballinger C, et al. Environmental interventions to prevent falls in community-dwelling older people: a meta-analysis of randomized trials. *J Aging Health*. 2008;20: 954-971.
146. Carpenter CR. Preventing falls in community-dwelling older adults. *Ann Emerg Med*. 2010;55: 296-298.
147. Cole MG, Ciampi A, Belzile E, et al. Persistent delirium in older hospital patients: a systematic review of frequency and prognosis. *Age Ageing*. 2009;38: 19-26.
148. Elie M, Rousseau F, Cole M, et al. Prevalence and detection of delirium in elderly emergency department patients. *CMAJ*. 2000;163: 977-981.
149. Kakuma R, Galbaud du Fort G, Arsenault L, et al. Delirium in Older Emergency Department Patients Discharged Home: Effect on Survival. *J Am Geriatr Soc*. 2003;51: 443-450.
150. Han JH, Shintani A, Eden S, et al. Delirium in the emergency department: an independent predictor of death within 6 months. *Ann Emerg Med*. 2010;56: 244-252.
151. Lewis LM, Miller DK, Morley JE, et al. Unrecognized delirium in ED geriatric patients. *Am J Emerg Med*. 1995;13: 142-145.
152. Hustey FM, Meldon SW. The prevalence and documentation of impaired mental status in elderly emergency department patients. *Ann Emerg Med*. 2002;39: 248-253.
153. Han JH, Zimmerman EE, Cutler N, et al. Delirium in older emergency department patients: recognition, risk factors, and psychomotor subtypes. *Acad Emerg Med*. 2009;16: 193-200.
154. Hustey FM, Meldon SW, Smith MD, et al. The effect of mental status screening on the care of elderly emergency department patients. *Ann Emerg Med*. 2003;41: 678-684.
155. Carpenter CR, Bassett ER, Fischer GM, et al. Four sensitive screening tools to detect cognitive impairment in geriatric emergency department patients: Brief Alzheimer's Screen, Short Blessed Test, Ottawa3DY, and the Caregiver Administered AD8. *Acad Emerg Med*. 2011 18: 374-384.
156. Han JH, Wilber ST. Altered mental status in older patients in the emergency department. *Clin Geriatr Med*. 2013;29: 101-136.
157. Han JH, Wilson A, Vasilevskis EE, et al. Diagnosing Delirium in Older Emergency Department Patients: Validity and Reliability of the Delirium Triage Screen and the Brief Confusion Assessment Method. *Ann Emerg Med*. 2013;62(5):457.65.
158. Carpenter CR. Does this patient have dementia? *Ann Emerg Med*. 2008;52: 554-556.
159. Quest TE, Marco CA, Derse AR. Hospice and palliative medicine: new subspecialty, new opportunities. *Ann Emerg Med*. 2009;54: 94-101.
160. Beemath A, Zalenski R. Palliative emergency medicine: resuscitating comfort care? *Ann Emerg Med*. 2009;54: 103-105.
161. Ciemins EL, Blum L, Nunley M, et al. The economic and clinical impact of an inpatient palliative care consultation service: a multifaceted approach. *J Palliat Med*. 2007;10: 1347-1355.
162. Barbera L, Taylor C, Dudgeon D. Why do patients with cancer visit the emergency department near the end of life? *CMAJ*. 2010;182: 563-568.
163. Grudzen CR, Richardson LD, Hopper SS, et al. Does palliative care have a future in the emergency department? Discussions with attending emergency physicians. *J Pain Symptom Manage*. 2012;43: 1-9.
164. Penrod J, Deb P, Luhrs C, et al. Cost and utilization outcomes of patients receiving hospital-based palliative care consultation. *J Palliat Med*. 2006;9: 855-860.
165. Penrod J, Deb P, Dellenbaugh C, et al. Hospital-based palliative care consultation: effects on hospital cost. *J Palliat Med*. 2010;13: 973-979.

Geriatric Emergency Department Guidelines Task Force

Mark S. Rosenberg, DO, MBA, FACEP
Chair, ACEP Geriatric Emergency Medicine Section (2011-2012)
Chairman, Department of EM
Chief, Geriatric Emergency Medicine
Chief, Palliative Medicine
St. Joseph's Healthcare System, Paterson, NJ

Christopher R. Carpenter, MD, MSc, FACEP
Chair, ACEP Geriatric Emergency Medicine Section (2012-2014)
Associate Professor of Emergency Medicine
Director of Evidence Based Medicine
Washington University in St. Louis School of Medicine

Marilyn Bromley, RN, BS
Director, EM Practice Department
Staff Liaison, Geriatric Emergency Medicine Section
American College of Emergency Physicians

Jeffrey M. Caterino, MD, MPH, FACEP
Associate Professor of Emergency Medicine and Internal Medicine
Director of Emergency Medicine Clinical Research
The Ohio State University

Audrey Chun, MD
Associate Professor of Geriatric and Palliative Medicine
Icahn School of Medicine at Mount Sinai

Lowell Gerson, PhD
Professor Emeritus, Department of Emergency Medicine
Northeast Ohio Colleges of Medicine

Jason Greenspan, MD, FACEP
Director of Emergency Services
Emergent Medical Associates

Ula Hwang, MD, FACEP
Associate Professor of Emergency Medicine
Icahn School of Medicine at Mount Sinai

David P. John, MD, FACEP
Co-Chair, Emergency Medicine
Johnson Memorial Medical Center
Northeast Emergency Medicine Specialists

Joelle Lichtman, MA
Interior Design-Gerontology Certificate
Certified Aging-in-Place Specialist (CAPS)
Brooklyn, NY

William L. Lyons, MD
Associate Professor in Internal Medicine and Geriatrics
University of Nebraska Medical Center

Betty Mortensen, RN, MS, BSN, FACHE
Chief Nursing Officer
Emergency Nurses Association

Timothy F. Platts-Mills, MD, MSc
Assistant Professor of Emergency Medicine
University of North Carolina at Chapel Hill School of Medicine

Luna C. Ragsdale, MD, MPH, FACEP
Clinical Associate
Duke University School of Medicine
Wake Forest University School of Medicine

Julie Rispoli
Project Manager, EM Practice Department
American College of Emergency Physicians

David C. Seaberg, MD, CPE, FACEP
Board Liaison, ACEP Geriatric Emergency Medicine Section (2007-2013)
President, American College of Emergency Physicians (2011-2012)

Scott T. Wilber, MD, MPH, FACEP
Associate Professor of Emergency Medicine
Northeast Ohio Medical University

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Gifts to Emergency Physicians from Industry

Reaffirmed April 2022, June 2015

Revised October 2009 with current title, June 2002, October 2001

Reaffirmed March 1997

Originally approved September 1992

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "Gifts to Emergency Physicians from Industry – Ethics and Policies"

The practice of the pharmaceutical and medical device industries to give gifts to physicians has come under increasing scrutiny in recent years. Prominent professional associations have issued reports recommending a ban on accepting gifts from industry. Many US academic medical centers have implemented policies prohibiting acceptance by physicians, other health care professionals, and trainees, of any gifts from industry representatives. The leading trade associations of the pharmaceutical and medical device industries have adopted revised guidelines for interaction with health care professionals that impose new voluntary restrictions on the practice of giving gifts.

Opponents of the practice of giving and accepting gifts cite neurobiological and psychosocial evidence that even small favors may create a subliminal sense of gratitude or loyalty that can influence physicians' medical treatment choices. The American College of Emergency Physicians believes that treatment choices should be based on an impartial assessment of the benefits, risks, and costs of the treatment for the patient, and not on a physician's relationship with industry representatives. For this reason, acceptance of gifts from the biomedical industry should be carefully limited, as detailed below.

The College also recognizes that emergency physicians should be free to interact with industry representatives if they choose, and that physicians may receive useful information about particular products from industry representatives. Emergency physicians may receive compensation at fair market value from pharmaceutical and biomedical device companies for legitimate professional services rendered, including participation in research and service as faculty in continuing education programs.

Whenever a gift is offered to them, emergency physicians should carefully consider the purpose of the gift and the likely consequences of accepting it. Emergency physicians should not accept any gift that they believe may inappropriately influence their treatment decisions.

Some gifts offered to emergency physicians serve the purpose of professional or patient education. Emergency physicians may accept educational gifts that are not of substantial value ($100 or less). Examples include:

- Occasional modest meals in an office, clinic, or hospital setting that accompany an educational presentation
- Evidence-based clinical care guidelines or pocket handbooks
- Anatomical models designed for patient education
- Informational materials to facilitate patient understanding of a disease or treatment

"Reminder items" of minimal value, such as pens, pencils, and note pads, are sometimes offered to emergency physicians. Since they may subconsciously influence future behavior, emergency physicians should exercise caution and individual judgment when accepting or refusing such items of minimal value.

Because of their potential to influence treatment decisions without compensating benefit for patients, emergency physicians should not accept as gifts any items that do not have a direct educational purpose and that are of more than minimal value. Examples of gifts that should not be accepted include:

- Meals provided for physicians or their family members, staff, or guests (other than modest meals accompanying educational presentations, as noted above)
- Personal or recreational items, such as tickets to theatrical or sporting events
- Direct subsidy of any expenses (such as registration, travel, lodging, meals) incurred in attending CME events or other educational or professional meetings (All industry support for such activities should be provided directly to the activity provider to offset program costs or to a general fund for continuing education programs.)
- Cash or cash equivalents such as gift certificates or vouchers
- Gifts offered in exchange for prescribing or using a product
- Medical equipment, such as stethoscopes or otoscopes
- Payment for token consultant or advisory arrangements
- Medical products for the personal use of the physician, the physician's staff, or family members

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Good Samaritan Protection

Reaffirmed January 2024, February 2018

Revised June 2012

Reaffirmed September 2005

Approved as a policy statement September 1999

Originally approved as CR029 September 1978

The American College of Emergency Physicians (ACEP) supports good Samaritan protection legislation designed to reduce liability exposure. ACEP also supports the extension of existing good Samaritan legislation to provide protection from liability for emergency physicians who respond to emergencies outside the emergency department, including but not limited to in-hospital and out-of-hospital emergencies, mass casualty incidents, and other disasters.

Guide

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Guideline for Ultrasound Transducer Cleaning and Disinfection

Revised April 2021

Originally approved June 2018

Recent literature highlights the need for improved education on processes and material for transducer (probe) cleaning and disinfection.[1-5] The clinician sonographer must be aware of the various disinfection protocols with each associated transducer type to ensure patient safety.

According to the American Institute of Ultrasound in Medicine (AIUM), "Infection control is an integral part of the safe and effective use of ultrasound in medicine."[6] In recognizing the importance of infection control, this ACEP statement provides membership with recommendations for the use of ultrasound gels, protective covers, probe cleaning and disinfection. More information may be found in the chapter on ultrasound safety and infection control within the *Ultrasound Program Management* textbook.[7]

The American College of Emergency Physicians (ACEP) does not endorse or recommend any specific commercial products. It recommends following manufacturer instructions, local law and institutional infection control regulations, as well as knowledge of Centers for Disease Control and Prevention (CDC), *Occupational Safety and Health Administration (*OSHA) and The Joint Commission guidelines along with Environmental Protection Agency (EPA) and the Food & Drug Administration (FDA) disinfectant classifications. The ACEP Clinical Ultrasound Accreditation Program (CUAP) ensures that quality and safety processes are demonstrated by accredited programs.[8]

1. Definitions regarding types of ultrasound transducers:[9]
    a. Critical Devices: intra-operative probes placed in sterile body cavities or intravascular transducers (not commonly utilized in emergency medicine applications, eg, intracardiac ultrasound probes).
    b. Semicritical Devices: transducers that come into contact with mucous membranes but do not penetrate membranes (eg, endocavitary/endovaginal probes and transesophageal probes)
    c. Noncritical Devices: instruments that come into contact with intact skin, but not mucous membranes (eg, external use linear, curvilinear and phased array transducers)

2. Definitions of cleaning vs. disinfection:[9]
   a. Cleaning is the removal of visible soiling from the surfaces and lumens of equipment by a manual or mechanical process, commonly with water and detergent or an enzymatic cleaner. Cleaning prepares the items for safe handling and/or further decontamination.
   b. Disinfection is the thermal or chemical destruction of pathogenic and other types of microorganisms. Disinfection is less lethal than sterilization as it destroys most recognized pathogenic microorganisms, but not necessarily all microbial forms (eg, bacterial spores).

3. Definition of types and categories of disinfectants:[9]
   a. Low-Level Disinfectants will destroy most bacteria, excluding tubercle bacilli, some viruses and some fungi. Examples include:
      i. Ethyl or isopropyl alcohol
      ii. Quaternary ammonium agents without mycobacterial labeling
   b. Intermediate or Mid-Level Disinfectants will destroy vegetative bacteria including tubercle bacilli and many viruses, but not bacterial spores. Examples include:
      i. Quaternary ammonium agent with mycobacterial labeling
      ii. Phenolic germicidal agents
   c. High-Level Disinfectants are able to remove bacterial spores when utilized in adequate concentrations and appropriate conditions. Examples include:
      i. Chemical sterilants or germicides, such as glutaraldehyde formulations
      ii. Hydrogen peroxide

*The level of disinfection provided by some agents is based on the concentration, method and time of exposure.

4. Protective barriers
   a. Protective barriers such as medical gloves, condoms and probe covers are regulated by the use of an "acceptable quality level" (AQL)for quality management.
   b. Probe covers with pore sizes < 30 nm are available and block most viruses including human papillomavirus (HPV) (50 nm).
   c. Adhesive barriers and covers designed for transducers are available and can be utilized instead of traditional sleeve type covers.
   d. Sterile film dressings could be utilized as a barrier and would be effective against organisms larger than its reported pore size of 27 nm. Referral to manufacturer recommendations is warranted.

5. Ultrasound gel
   a. Gel products are available as non-sterile, bacteriostatic and sterile. Non-sterile gel is available as single use or multidose products. Bacteriostatic and sterile gel generally are available as single use products.
   b. Multidose gel containers should be discarded when empty (eg, do not refill containers)
   c. Care should be taken with multidose gel containers to avoid contact between the dispensing tip and the transducer or skin surfaces to prevent contamination.
   d. Multidose gel containers should be discarded after a set time once opened, some sources advocate a 28-day life-cycle.
   e. Gel used on patients under droplet or contact precautions should be discarded after use, regardless if it is a multidose container.

f. Sterile gel should be utilized when potential infection is a concern such as sterile percutaneous guided procedures, contact with non-intact skin or mucosal surfaces and fresh surgical sites.
g. Bacteriostatic gel can be utilized on intact mucosal surfaces.

6. Recommendations
   a. Transducers used on clean, intact skin (commonly external linear, curvilinear and phased array) are considered noncritical devices and require low-level disinfection after each use.[9]
   b. Transducers which are used during percutaneous procedures (vascular access, thoracentesis, paracentesis, arthrocentesis, pericardiocentesis, lumbar puncture, regional anesthesia and other procedures) or on non-intact skin should be covered with a single-use sterile probe cover matching the sterility of the procedure, then undergo low-level disinfection between uses.[10]
   c. If the probe cover fails, the transducer should be considered contaminated with blood or bodily fluids and undergo low-level disinfection with an agent that has activity against bloodborne pathogens (hepatitis B virus, hepatitis C virus, and HIV) and tubercle bacilli.[10]
   d. External transducers that become contaminated by blood or bodily fluid should undergo low-level disinfection with an agent that has activity against bloodborne pathogens (hepatitis B virus, hepatitis C virus, and HIV) and tubercle bacilli.
   e. Internal transducers with mucosal contact (eg, endocavitary transducers for intra-oral procedures or transvaginal examinations and transesophageal probes) are semicritical devices that should be covered with a single-use probe cover, as appropriate, and undergo high-level disinfection between uses. Reusable intra-operative probes placed in sterile body cavities are considered critical devices and are not commonly utilized in the emergency department. Intra-operative probe use should incorporate a single-use probe cover and high-level disinfection between uses.
      i. The operator should be properly gloved while performing internal examinations, removing probe covers, and during cleaning and disinfection of transducers. During probe cover removal, care should be taken to avoid transducer contamination with blood or bodily fluids. After completion of the exam, the operator should perform adequate hand hygiene.
      ii. Operators should be aware of institutional high-level disinfection procedures and workflow processes that may include communication with supply technicians, adoption of equipment covers, transport protocols and equipment tracking systems.
   f. Single-use sterile gel packets should be used when infection is a concern. These include:
      i. Invasive procedures that involve percutaneous puncture.
      ii. Ultrasound examinations performed on non-intact skin or near fresh surgical sites.
      iii. Non-intact mucosal surface contact, alternatively bacteriostatic gel can be used if the mucosal surface is intact.

Summary

1. Transducers used externally on intact skin without contamination of blood or bodily fluids should undergo low-level disinfection between each use.
2. Transducers used externally for percutaneous procedures or non-intact skin should be covered with appropriate single-use protective covers and use sterile gel. They should subsequently undergo low-level disinfection.
3. If a probe cover or barrier fails, the transducer should be considered to be contaminated by blood or bodily fluids.

4. If a transducer for external use or percutaneous guidance is contaminated by blood or bodily fluids it should undergo low-level disinfection with an agent that is active against hepatitis B virus, hepatitis C virus, HIV and tubercle bacilli.
5. Transducers used internally on mucous membranes and internal orifices should be covered with a high-quality single-use probe cover, where appropriate, followed by high-level disinfection between each use.

References

1. Adhikari S, Blaivas M, Morrison D, et al. Comparison of infection rates among ultrasound-guided versus traditionally placed peripheral intravenous lines. *J Ultrasound Med*. 2010;29:7417.
2. Casalegno J, Carval K, Elbach D, et al. High-risk HPV contamination of endocavity vaginal ultrasound probes: An underestimated route of nosocomial infection? *PLoS ONE* 2012; 7:e48137. https://doi.org/10.1371/journal.pone.0048137
3. Westerway SC, Basseal JM, Brockway A, et al. Potential infection control risks associated with ultrasound equipment–a bacterial perspective. *Ultrasound Med Biol*. 2017;43:4216.
4. Abramowicz JS, Evans DH, Fowlkes JB, et al and WFUMB Safety Committee. Guidelines for cleaning transvaginal ultrasound transducers between patients. *Ultrasound Med Biol*. 2017;43:1076–9.
5. Nyhsen CM, Humphreys H, Koerner RJ, et al. Infection prevention and control in ultrasound - best practice recommendations from the European Society of Radiology Ultrasound Working Group. *Insights Imaging*. 2017;8:5235.
6. American Institute of Ultrasound in Medicine. Guidelines for Cleaning and Preparing External- and Internal-Use Ultrasound Probes Between Patients, Safe Handling, and Use of Ultrasound Coupling Gel, 2018. http://www.aium.org/officialStatements/57
7. Nomura, J.T. & Nagdev, A.D. (2018). Ultrasound safety and infection control. In V.S. Tayal, M. Blaivas, T.R. Foster (Eds.), *Ultrasound Program Management: A Comprehensive Resource for Administrating Point-of-Care, Emergency, and Clinical Ultrasound* (1st ed., pp. 243-268). Cham, Switzerland: Springer International Publishing AG.
8. ACEP Clinical Ultrasound Accreditation Program (CUAP). Frequently Asked Questions. https://www.acep.org/by-medical-focus/ultrasound/cuap/faqs/
9. Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008; Updated May 2019. Centers for Disease Control and Prevention. https://www.cdc.gov/infectioncontrol/guidelines/disinfection/
10. Disinfection of Ultrasound Transducers Used for Percutaneous Procedures: Intersocietal Position Statement. *J Ultrasound Med*. 2020; online before print. https://doi.org/10.1002/jum.15653

Addendum
COVID-19: Ultrasound Machine and Transducer Cleaning
Approved April 2020

The ACEP Emergency Ultrasound Section wishes to provide guidance for cleaning and disinfection of ultrasound equipment in the context of the COVID-19 pandemic.

Special guidance regarding COVID-19 includes the following:

1. Removal of all nonessential equipment prior to entering the room of a suspected COVID-19 patient.

This prevents unnecessary items from contamination by droplets and may include removal of non-

essential transducers or extraneous items (eg, peripheral IV cannulas, plastic film dressing, bags holding towels, etc.).

2. ***Clinicians should follow optimal hand hygiene by washing their hands between patients and wearing single-use gloves.***

   We recommend that before cleaning, clinicians remove gel and debris, then use one of the EPA recommended products in between each patient encounter to disinfect the probe.[1] Clinicians may find it advantageous to use a double-glove technique to help avoid cross-contamination from bare hands during the cleaning process.

3. ***When scanning patients who are at low-risk for COVID-19 or are not in droplet precautions, we recommend disinfecting the probe and surfaces that were touched during the examination (screen, keyboard, cable, etc.).***

   Due to recent knowledge that SARS-CoV-2, the causative agent of COVID-19 can be present on surfaces for days, we recommend disinfecting surfaces that either come into contact with the patient (cable and transducer) as well as surfaces that are touched by the clinician (keyboard, screen, handlebar, etc.)[2] We recommend the clinician remove gel and debris, and then use one of the EPA recommended products in between each patient encounter.[1,3]

4. ***In situations when aerosolization or high-risk procedures can occur, probes and machines should be covered (if possible) and disinfected with low-level disinfection (LLD) after every use.***

   We recognize that many clinicians will not have access to transparent covers for ultrasound systems. In those cases, the entire ultrasound system and frequently touched surfaces should be disinfected with LLD solution between each patient.[4]

   When performing an ultrasound examination in critically ill patients requiring active resuscitation where aerosolization is a risk (intubation, medication nebulization, chest compressions, non-invasive ventilation, etc.) the machine and its components should be protected as much as possible.[1,5] This includes use of probe covers (sterile and non-sterile) and may involve draping material such as translucent bags. These covers should be discarded prior to exiting the patient's room taking care to avoid cross-contamination, in keeping with local infection control recommendations.

5. ***High-level disinfection (HLD) is not required when using ultrasound probes on intact skin***.

   Please refer to the current *ACEP Guideline for Transducer Cleaning and Disinfection* to determine when to use HLD.[3] There is no evidence that HLD offers benefit for disinfection from SARS-CoV-2.

   For ultrasound use during procedures (such as peripheral or central venous access), a sterile probe cover should be used, followed by LLD in accordance with the *ACEP Guideline for Transducer Cleaning and Disinfection.*

6. ***Handheld devices may be covered with device covers for both the touchscreen and the probe with its cord. All items should be cleaned with LLD after use on each patient.***

7. ***Innovative cleaning solutions should be discussed with local infection control and the vendors supplying the machine***.

The stocking of different solutions and products vary across the country, and some systems are facing shortages of certain products. We recommend that, in conjunction with Infection Control, physicians and health systems consider common disinfectants for cleaning if there are no alternatives to commercial healthcare products. Examples would include soap and water, diluted bleach, and ammonium chloride derivatives. This should be discussed with the vendor to prevent inadvertent destruction of machine elements.

References

1. Environmental Protection Agency. List N: Disinfectants for Use Against SARS-CoV-2. *2020 Available at: https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2. (Accessed March 24, 2020)*
2. van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *N Engl J Med*. 2020 Mar 17.
3. Guideline for Ultrasound Transducer Cleaning and Disinfection. Annals of Emergency Medicine. 2018 Oct;72(4):e45–7.
4. Centers for Disease Control and Prevention. Interim Infection Prevention and Control Recommendations for Patients with Suspected or Confirmed Coronavirus Disease 2019 (COVID-19) in Healthcare Settings. *2020* Available at: https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fhcp%2Finfection-control.html#infection_control. (Accessed March 24, 2020)
5. Tellier R, Li Y, Cowling BJ, Tang JW. Recognition of aerosol transmission of infectious agents: a commentary. *BMC Infectious Diseases*. 2019 Jan 30;1-9.

PRIOR TO ENTERING ROOM	
	Ensure that all unnecessary materials are removed from the machine and the basket.
For Patients on DROPLET precautions, once the ultrasound is completed, remain inside the room with PPE on. Sanitize gloves and then:	
	Visually inspect the machine for any gel, bodily fluid or debris • Clean with low level disinfectant spray, soap + water, or approved wipe
 For a list of approved wipes check EPA site	Using approved wipe, disinfect all machine surfaces including: • surfaces that either come into contact with the patient • surfaces that are frequently touched by the clinician *** please remember that there is a "wet time" associated with all wipes, check the manufactures recommendation**
For patients on AIRBORNE precautions, once the ultrasound is completed, remain inside the room with PPE on. Sanitize gloves and then:	
	Visually inspect the machine for any gel, bodily fluid or debris • Clean with low level disinfectant spray, soap + water, or approved wipe
	While still in PPE, move the machine as far from the patient as possible. Using approved wipes, disinfect all machine surfaces including: • probes and cords • the keyboard • the screen • the power cord • the lid • the wheels • wells or buckets built into the machine • gel bottles and wipes containers *** please remember that there is a "wet time" associated with all wipes, check the manufacturers recommendation** ****Consider cleaning again immediately after leaving the room**
	Maintain wet for **<u>required amount of time</u>** before considering the device decontaminated *** In addition to the above, follow the policies of institutional infection control**

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2023

Guidelines for Emergency Physicians on the Interpretation of Portable Medical Orders

Revised March 2023
with current title

Originally approved
April 2017 titled "Guidelines for Emergency Physicians on the Interpretation of Physician Orders for Life-Sustaining Therapy (POLST)"

The ethical principles of patient autonomy and right of a patient to make decisions about their medical care are grounded in the due process clause of the 14th amendment. Portable medical orders are an attempt to these principles and rights. Advance directives, living wills, and Do-Not-Resuscitate (DNR) documents are designed to allow individuals with the opportunity to express their treatment preferences in situations when they cannot communicate those preferences themselves. Unfortunately, clinicians may not be able to honor such wishes because these documents are either unavailable or contain ambiguous language. As a result, emergency physicians may in good faith initiate or stop treatments that are contrary to a patient's wishes.[1]

Portable medical orders are designed to help health care professionals honor and implement the treatment wishes of patients, especially in outpatient settings and during acute emergency medical care. POLST is one prominent kind of portable medical order, but the description can apply to other portable medical orders in general as well. Portable medical orders help physicians, nurses, long-term care facility personnel, hospice staff, home health agency care providers, emergency medical services professionals, hospital workers, and other health care professionals to:

- Promote patient autonomy by documenting treatment preferences and converting them into medical orders;
- Clarify patient treatment preferences unambiguously with specificity;
- Facilitate value-concordant treatment; and
- Ensure a patient's expressed treatment wishes are taken into account by all health care professionals across the different settings of health care delivery.[1]

Portable medical orders forms are not intended to replace a living will or health care power of attorney. Rather, they are designed to implement patient wishes by translating the patient's treatment wishes into medical orders, centralizing information, facilitating record keeping, and ensuring transfer of

appropriate information among health care professionalism and across care settings.[1]

When Should a Portable Medical Order be Used?

A POLST form is primarily intended for seriously ill or frail patients who have an advanced chronic or a progressive life-limiting illness. POLST orders may also be used by patients who are at risk for impaired decision-making capacity and by anyone with strong treatment preferences.[2]

Different states have adopted different names and acronyms for POLST-type orders, including Physician Orders for Scope of Treatment (POST), Medical Orders for Scope of Treatment (MOST), and Medical Orders for Life- Sustaining Treatment (MOLST); these orders all share the same core elements with similar form and design. Their names can vary by state, but we will refer to portable medical orders as POLST for the purpose of these Guidelines. A National POLST Paradigm Task Force and Office coordinates state-specific efforts to adopt and disseminate these orders, and the order set with specified set of common elements are referred to as POLST Paradigm orders.[3]

Specific Orders:

POLST Paradigm order forms differ among the states that have adopted them - such as the order of the sections or the options within a section may be different - but all of them discuss treatment preferences regarding a number of essential medical treatments or services.[4]

- Cardiopulmonary Resuscitation (CPR) Medical Interventions such as intubation
- Medically Administered Fluids and Nutrition
- Signatures Confirming the Orders/Wishes

CPR and medical interventions sections are relevant in emergency situations and need to be easily identified. Many states also include a section on “Goals of Care” that is typically free text. Patient goals of care should provide guidance to medical professionals filling out a POLST form and to those interpreting a POLST form, as they provide important information that can translate patient preferences and values into medical orders that are more easily understood and specific.

CPR

These orders apply only to the circumstance in which a person experiences cardiopulmonary arrest, ie, the individual has no palpable pulse or noticeable breathing activity. This section does not apply to any other medical circumstances. If a patient is in respiratory distress but is still breathing or has a pulse, a first responder or emergency physician should refer to other sections for guidance.[4]

Beware of the possibility of the completion of POLST forms with potentially contradictory orders—for example, if the patient wants CPR, but does not want intubation. Patients and families sometimes misunderstand CPR. Hence, patient education regarding invasive treatments, ramifications, and expectations is essential to optimal communication regarding patient wishes prior to translating wishes into POLST.1 The performance of CPR requires resuscitation protocols that involve intubation to secure a patient’s airway and support their breathing. If the patient does not want aggressive full treatment including intubation and mechanical ventilation in an intensive care unit (ICU), then the patient should not receive CPR.[1]

In contrast to such inconsistent POLST orders, some patients may not desire CPR if they experience a cardiac

arrest, but they may still reasonably desire ICU care for serious illness or elective intubation for respiratory failure without cardiac arrest. This choice may be a rational one, as ICU care may provide a patient significant benefit, even if, despite those benefits, the patient would choose to avoid CPR given its low likelihood of benefit.

Medical Interventions

These orders apply to emergency medical circumstances when a person has not experienced cardiopulmonary arrest; in other words, these orders are for a person who has a pulse and/or is breathing.

Full Scope of Treatment:

If full aggressive treatment by emergency personnel or other appropriate health care professionals is indicated and desired, the "Full Scope of Treatment" box is checked. Treatment includes use of advanced airway interventions such as CPR, endotracheal intubation, mechanical ventilation, central venous line placement, vasopressor support, and electrical therapies such as defibrillation, cardioversion, and pacing. If the patient is not already at the hospital, transfer to the hospital and use of intensive care may be indicated.

Selective/ Limited Additional Interventions:

This option is for patients who prefer to receive medical treatments for reversible conditions or exacerbations of underlying disease with the goal of restoring the patient to his/her usual state of health.4 It directs that medical treatments such as antibiotics, IV fluids, cardiac monitoring and similar therapies be used as indicated for secondary or incidental complications such as pneumonia, but that intubation and mechanical ventilation be omitted. This option does allow the use of less invasive airway support such as bilevel positive airway pressure (BiPAP), continuous positive airway pressure (CPAP), high flow nasal cannula and it directs that appropriate symptom management for measures be provided.[1]

This section can also have an area to indicate "Other Instructions." This may be helpful to clarify other interventions as appropriate for individual patients.

Comfort-Focused/ Symptom Treatment:

Selection of this option indicates a desire for interventions that focus on comfort through symptom management. Medications by any route, positioning, wound care, and other measures are to optimize patient comfort. The use of oxygen, suction, and manual treatment of airway obstruction should be administered as needed for comfort.[1,4]

Patients should be admitted to a hospital if needs cannot be met adequately in the current location. If symptoms can be controlled, then possible discharge with symptom management should be considered. Also, if the focus is comfort, hospice care and palliative care consultation may be appropriate. Sometimes more specific instructions may be recorded in "Other Instructions."[4]

Medically Administered Fluids and Nutrition

These orders pertain to a person who cannot take fluids and food by mouth. Oral fluids and nutrition always should be offered to a patient if medically feasible. Most POLST forms require a single choice among three options for tube feedings, including fluids and nutrition provided via intravenous (IV), nasogastric (NG) or percutaneous endoscopic gastrostomy (PEG) routes.[4]

Long-Term artificial nutrition by tube if indicated – A patient (or his/her representative) may decide to receive IV fluids if indicated. When this box is checked, IV fluids should be administered whenever clinically indicated.

Defined trial period of artificial nutrition by tube – A patient (or his/her representative) may prefer to receive IV fluids for a defined trial period when clinically indicated. For example, a patient may desire a brief trial of IV hydration if they become dehydrated. In this case, the IV fluids would be a temporary intervention with the goal of treating a potentially reversible acute illness over a few days to a week.

No artificial nutrition – A patient (or his/her representative) may prefer to forgo the use of medically provided fluids and nutrition. Again, oral fluids and nutrition always should be offered to a patient if medically feasible and desired by the patient.

"Other Instructions" allows for further clarification in this section as well.[1]

Discussed with and Agreed by: Signatures

The signatures section of the POLST form MUST be completed. The persons or class of persons who can issue or consent to POLST orders varies from state to state but should be listed on the POLST form. If the patient is an adult and is able to make and communicate health care decisions, then the patient is the only person who can consent to the physician issuing the orders of the POLST form. The patient's signature of consent may be required for the form in some states, with a few having a requirement for a witness for the signature or the conversation. If the patient is a minor, then a parent or guardian may consent to the physician's completion of a POLST form. Some states may currently limit use of POLST to patients 18 years of age or older.[4]

If the patient is an adult who no longer has the capacity to make and communicate health care decisions, the POLST form may be discussed with and agreed to by the legally authorized representative of the patient, as indicated by the form.[4]

Signature of the Appropriate Decision-Maker:

The National POLST Paradigm Task Force strongly recommends evidence that the patient or the patient's representative has reviewed the form and agrees that the orders reflect the patient's preferences.3 Some states have a section for a patient to name their health representative or surrogate if/when the patient was to lose decision capacity.

If the patient has the capacity to make and communicate health care decisions, he or she must agree to the orders. When the patient lacks the capacity to make or communicate health care decisions, then the appropriate patient representative signature should be present and is sometimes required by law to sign the form, depending on the state in which it is being signed. In situations where the patient representative cannot be physically present to sign the form, some states allow the medical provider to discuss the details over the phone with the appropriate patient representative.

Health Care Professional Signature:

Since the form is the issuance of a medical order, the signature of a health care professional is mandatory. Which group of health care professionals can sign a properly filled out POLST form varies by state, and may include physicians, nurse practitioners, and physician assistants. Without this signature, the orders in the POLST form are not valid. The date and printed name of the health care professional should be

provided. Social workers, and chaplains may initiate a discussion and educate a patient about POLST, but the signature must be that of the practitioner who is issuing the order.

Additional Sections of the Portable Medical Order Form

Additional sections of the POLST form generally provide space for contact information. Most included fields are the patient's name and birth date (on every page for accuracy in case the form is faxed on individual pages), the health care professional who signed the document, the patient's representative or surrogate, the relationship to the patient, and phone numbers. This allows health care professionals to attempt early contacts with this person when the patient's health status changes. Explanations for use of the form and provisions for reviewing or revoking the form may also appear.

Revoking the Portable Medical Order Form

A patient with decision making capacity or the patient's representative (if the patient lacks capacity) can revoke the POLST when faced with new information or changes to the patient's condition and request alternative treatment based on known preferences of the patient or, if unknown, the patient's best interests.

Depending on the state, a POLST form may also be revoked in a number of ways including destruction, putting a line through the front page and writing void on the form, or by indicating in the review section on the back that POLST orders have been revoked.

Portable Medical Orders that are not Medically Feasible or are Inconsistent

POLST forms provide significant additional guidance for honoring patient treatment preferences and communicating those preferences in a clear manner to medical personnel. However, a small number of POLST forms might reflect patient preferences and order sets that may not be medically feasible or are logically inconsistent. For example, a form selecting "attempt resuscitation" and "comfort measures only" is inconsistent. Some POLST forms might require more interpretation than time allows during an emergency (eg, attempt CPR, but limit interventions).[5,6]

If emergency health care personnel are presented with a POLST form with inconsistent treatment wishes and time allows, the provider should describe the inconsistency and seek clarification from the patient (provided the patient has decision-making capacity), the medical provider who signed the form or the patient's representative or surrogate, to clarify the patient's care preferences. If these efforts fail to clarify or the patient's medical condition may be such that there is not enough time to seek clarification, then provider should, in good faith, act in light of expressed patient values (eg, specified in an advance directive) if available; when expressed patient values are not available, the provider should act in the patient's best interests based upon his or her own medical judgment.[6]

Legal Protection for Emergency Physicians Honoring Portable Medical Orders

Although most states have either an established or developing POLST program, some have not yet provided explicit statutory protection for physicians who honor patient wishes in good faith through a POLST form (as is frequently provided for in the setting of pre-hospital DNR orders and advance directives). In those states without explicit statutory protection, physicians are protected under common law when they follow generally accepted standards of practice in their area.3 It should be noted that in most states, there is no legal immunity for following DNR orders in the inpatient setting; however, most physicians, including ED physicians, honor those orders, nonetheless. Furthermore, the federal government takes a strong position on the hospital's obligation to honor patient decisions concerning their care.[6,7,8]

References

1. North Carolina Partnership for Compassionate Care and North Carolina Medical Society Foundation. Using the MOST Form Guidance for HC Professionals. http://www.ncmedsoc.org/wp-content/uploads/2014/06/Using-the- MOST-Form-Guidance-for-HC-Professionals.pdf. Accessed October 6, 2022.
2. POLST: Guidance for Oregon's Health Care Professionals. November 2020. https://oregonpolst.org/wp- content/uploads/2021/03/2020.11.19-2020-Oregon-POLST-HCP-Guidebook-1TOC.pdf. Accessed October 5, 2022.
3. National POLST Paradigm Task Force. POLST Legislative Guide. 2020. https://polst.org/wp-content/uploads/2020/11/2020-POLST-Legislative-Guide.pdf Accessed October 5, 2022.
4. POLST Paradigm Form Elements. http://www.polst.org/about/polst-form-elements/. Accessed October 5, 2022.
5. Schmidt TA, Zive D, Fromme EK, et al. Physician orders for life-sustaining treatment (POLST): lessons learned from analysis of the Oregon POLST Registry. *Resuscitation*. 2014 Apr;85(4):480-5. doi:10.1016/j.resuscitation.2013.11.027. Epub 2014 Jan 6.
6. Jesus JE, Geiderman JM, Venkat A, et al. Physician orders for life-sustaining treatment and emergency medicine: ethical considerations, legal issues, and emerging trends. *Ann Emerg Med*. 2014 Aug;64(2):140-4. doi:10.1016/j.annemergmed.2014.03.014. Epub 2014 Apr 16.
7. E-CFR: Title 42: Public Health PART 482—CONDITIONS OF PARTICIPATION FOR HOSPITALS, Subpart 1. C—Basic Hospital Functions. https://www.ecfr.gov/cgi-bin/text-idx?SID=9003d501460df9e2b88aec763b2c0e2b&mc=true&node=sp42.5.482.c&rgn=div6. Accessed October 5, 2022.
8. DeArmond v. Permanente Medical Group Et. Al. (Superior Court of California 2011).

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Guidelines for Undergraduate Education in Emergency Medicine

Revised June 2023, June 2021, June 2015, April 2008, January 1997

Reaffirmed October 2001

Originally approved September 1986

The American College of Emergency Physicians (ACEP) believes that all medical students should be taught the basic principles of emergency medicine in order to recognize a patient requiring urgent or emergent care and initiate evaluation and management.

ACEP believes that every medical student should receive clinical exposure to patients in the emergency department and be taught core principles of emergency medicine by American Board of Emergency Medicine/American Osteopathic Board of Emergency Medicine (ABEM/AOBEM) board certified emergency physicians.

The emergency medicine environment places a premium on focused history and physical exam skills, diagnostic reasoning and critical thinking, and collaboration as a member of an interprofessional team. These skills are essential for students entering any clinical specialty. Therefore, the prioritization of emergency care will benefit all students regardless of their ultimate chosen specialty.

The general educational objectives for all graduating medical students include general assessment skills for the undifferentiated patient, recognition and stabilization of life threatening illnesses, injury prevention and disease identification, unique content areas, basic procedural competency and understanding the role of the emergency department in the healthcare system.

An appropriate curriculum incorporates these objectives to create a progressive learning environment over the entire continuum of the undergraduate educational experience. The curricular design should be tailored to local abilities, resources, and needs, and should be driven by ABEM/AOBEM board certified experts in emergency medicine under direction of an academic department or division of emergency medicine.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department

Revised June 2023, March 2022, June 2020 with current title, June 2013 titled "Guidelines Regarding the Role of Physician Assistants and Advanced Practice Registered Nurses in the Emergency Department"

Originally approved January 2007 titled "Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department", replacing "Guidelines on the Role of Physician Assistants in Emergency Departments" (2002) and "Guidelines on the Role of Nurse Practitioners" in the Emergency Department" (2000)

Physician assistants (PAs) and nurse practitioners (NPs) serve as integral and valued members of the physician-led emergency department care team. They do not possess the training and expertise in emergency medicine that may only be acquired through successful completion of an ACGME accredited emergency medicine residency training program - there are no exceptions. The American College of Emergency Physicians (ACEP) believes that regardless of where a patient lives, all patients who present to emergency departments (EDs) deserve to have access to high quality, patient-centric care delivered by emergency physician-led care teams. Accordingly, ACEP endorses the following principles for EDs that utilize PAs and/or NPs in the delivery of emergency department care.

Emergency Department Physician-Led Care Teams

- Because of the nature of emergency medicine, in which patients present with a broad spectrum of acute, undifferentiated illness and injury, including critical life-threatening conditions, the gold standard for emergency department care is that provided by an emergency physician who is certified (or eligible to be certified) by the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM) in emergency medicine or pediatric emergency medicine or an equivalent international certifying body recognized by ABEM or AOBEM in emergency medicine or pediatric emergency medicine.

- EDs should have a medical director who is certified (or eligible to be certified) by the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM) in emergency medicine or pediatric emergency medicine or an equivalent international certifying body recognized by ABEM or AOBEM in emergency medicine or pediatric emergency medicine.

- The ED medical director should be responsible for the orientation and ongoing professional practice evaluation of PAs and NPs working in the ED. The individual evaluative process should be transparent and should provide PAs and NPs with constructive feedback including recommendations for clinical care delivery improvement and professional development.

- As PAs and NPs have variable training and experience, the ED medical director should have the authority to approve both departmental credentialing and for the granting of clinical privileges for PAs and NPs working in the ED.

- ACEP supports the ongoing educational efforts of PAs and NPs in order to improve their clinical and professional knowledge and skills. These ongoing educational efforts may include formal postgraduate emergency medicine training programs. However, these postgraduate training programs for PAs and NPs do not provide training comparable to that provided in an ACGME-accredited emergency medicine residency training program and will never substitute for this comprehensive, specialized, and standardized training.

- ACGME-accredited emergency medicine residency training of physicians should include training in the value and importance of the emergency physician-led care team. This training should include instruction on how to effectively supervise PAs and NPs.

Emergency Physician Supervision of PAs and NPs

- PAs and NPs should not perform independent, unsupervised care in the ED.

- The gold standard for emergency department care is that provided by an emergency physician. If PAs and NPs are utilized for providing emergency department care, the standard is onsite supervision by an emergency physician. The supervising emergency physician for a PA or NP must have the real-time opportunity to be involved in the contemporaneous care of any patient presenting to the ED and seen by a PA or NP.

- ACEP acknowledges that there are currently workforce limitations in specific CMS-designated facility types in which supervision of a PA or NP by an emergency physician may be provided "Offsite" by telehealth means as follows:

    - Critical Access Hospitals (CAHs)
    - Rural Emergency Hospitals (REHs)

Supervision of PAs and NPs

For all patients being cared for by a PA or NP within the ED, the on-duty emergency physician should solely determine which level of supervision is appropriate. This determination should be made based upon the clinical patient information available and an individual assessment of the PA or NP caring for the patient. Emergency physicians should always have the authority and opportunity to be involved in the care of any patient presenting to the ED and seen by a PA or NP while they are on duty. Emergency physicians must be allowed to determine their level of interaction, care, and involvement for patients seen by a PA or NP under their supervision.

The following concepts of supervision are defined as follows:

- Direct versus Indirect Supervision - defines the degree of involvement of the emergency physician in the care of a patient being seen by a PA or NP.

- Direct Supervision: When the supervising physician personally examines/evaluates the patients for which she/he is the supervisor. This is the gold standard of supervision.

- Indirect Supervision: When the supervising physician contemporaneously discusses or reviews the management of patients for which she/he is the supervising physician but does not personally examine/evaluate the patient.

- Onsite versus Offsite Supervision – delineates the location of the supervising emergency physician for patients being cared for by a PA or NP.

  - Onsite: When the supervising physician is physically present in the ED and is available to examine/evaluate the patient.

  - Offsite: When the supervising physician is not physically present in the ED but is available 24/7/365 for real-time consultation such as by telehealth means.

    - Since the supervising emergency physician is not physically present when providing offsite supervision, the PA or NP caring for the patient must discuss all patients with the supervising physician.

- The following levels of emergency physician involvement in the care of patients seen by a PA or NP are NOT adequate for optimal patient care and are NOT considered appropriate supervision of an PA or NP in the ED.

  - Oversight: When an emergency physician is available for supervision, but the PA or NP does not discuss or review the management of the patient, and the physician is not involved in real-time patient care or does not examine/evaluate the patient directly.

  - Asynchronous Chart Review: Review of charts in a non-contemporaneous manner for care provided by an PA or NP. While chart review is an important quality assurance activity, it does not constitute direct or indirect supervision.

Additional Concepts

- Multiple staffing models utilizing PAs and NPs exist. The use of PAs and NPs in the ED should be determined at the site level by local ED physician leadership, who are responsible for PA/NP hiring, supervision, and credentialing of clinical privileges. These emergency physician leaders should be responsible for establishing processes and practice standards that ensure both sufficient physician availability for PA and NP supervision as well as adequate physician opportunity to supervise.

- Emergency physicians should not be required to sign the chart of a patient unless they have a real-time opportunity to be involved in the patient's care. Though state and hospital policies may require a physician's signature on all patient charts regardless of physician involvement or supervision, it should be clearly noted in these cases that the physician was not actively involved in the patient's care.

- All clinical documentation should clearly reflect the role and involvement of the emergency physician and any PAs or NPs who have actively participated in the care of a patient. In particular, the physician should carefully document their independent findings and medical decision making.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Handling of Hazardous Materials

Revised June 2019, June 2013, October 2006

Originally approved June 1999 replacing CR036(85) "Hazardous Materials, Access to Information" and CR026(88) "Hazardous Materials, Transportation of Hazardous Materials"

The American College of Emergency Physicians (ACEP) believes that nuclear, chemical, and biological hazardous materials pose a significant risk to individuals and communities if improperly handled or if released accidentally or intentionally into the environment.

- Individuals who are at risk, including emergency personnel, have the right to know when these materials are used in or transported through their communities.
- Emergency personnel must have immediate access to all information necessary to treat victims, protect themselves, and prevent exposure of others.
- Hazardous materials should be clearly and appropriately marked.
- Vehicles transporting hazardous materials should be clearly marked that they are used for such purposes, and drivers of those vehicles should be educated in the safe transport of hazardous materials.
- Emergency personnel responsible for the care and treatment of victims of exposure to hazardous materials should be appropriately educated and trained in methods of self-protection, patient protection, and resuscitation.
- Administrative and clinical guidelines should include principles of decontamination of personnel, patients, and vehicles, including minimum equipment requirements for personal protective equipment and recommended safety procedures.
- Emergency personnel and facilities should be updated by local, regional, state and/or federal authorities or agencies as needed to allow preparation when a defined threat is identified.

ACEP supports state and federal policies that promote adherence to these principles.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Handoffs: Transitions of Care for Children in the Emergency Department

Reaffirmed October 2020

Originally approved
July 2016

A joint policy statement of the American College of Emergency Physicians, American Academy of Pediatrics, and Emergency Nurses Association

Available online at
https://pediatrics.aappublications.org/content/138/5/e20162680#sec-20

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Health Care Guidelines for Cruise Ship Medical Facilities

Reaffirmed January 2019, June 2013, October 2007 and October 2001

Revised with current title December 1997

Originally approved September 1995 titled "Guidelines for Care of Cruise Ship Medical Facilities"

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) titled "Health Care Guidelines for Cruise Ship Medical Facilities"

The American College of Emergency Physicians believes that appropriate emergency care and health care maintenance for passengers and crew members aboard ships sailing in international waters are desirable. The cruise ship industry and its medical departments should retain medical personnel who can:

- Provide quality maritime medical care for passengers and crew members aboard cruise ships;
- Initiate appropriate stabilization, diagnostic, and therapeutic maneuvers for critically ill or medically unstable patients;
- Support, comfort, and care for patients on board ship; and
- Assist, in conjunction with the cruise line, in the medical evacuation of patients in a timely fashion when appropriate.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Health Care System Surge Capacity Recognition, Preparedness, and Response

Reaffirmed October 2023, October 2017

Revised October 2011

Originally approved August 2004

The American College of Emergency Physicians (ACEP) believes that:

- Emergency departments, as principal portals of entry into crowded health care systems, are increasingly faced with the challenge of ensuring patients have access to care during periods when demand exceeds available resources. This challenge is magnified when mass casualty incidents or epidemics occur.

- Surge capacity is a measurable representation of ability to manage a sudden influx of patients. It is dependent on a well-functioning incident management system and the variables of space, supplies, staff and any special considerations (contaminated or contagious patients, for example).

- Health care systems must develop and maintain outpatient and inpatient surge capacity for the triage, treatment, and tracking of patients at the facility or in alternative sites of care or alternative hospitals during infectious disease outbreaks, hazardous materials exposures, and mass casualty incidents.

- Health care facility and system plans should maximize conventional capacity as well as plan for contingency capacity (adapting patient care spaces to provide functionally equivalent care) and crisis capacity (adapting the level of care provided to the resources available when usual care is impossible).

- Development of surge capacity requires augmenting existing capacity as well as creating capacity by limiting elective appointments and procedures and practicing ”surge discharge” of patients that can be effectively managed in non-hospital environments.

- Effective surge capacity planning integrates facility plans with a regional disaster response program involving other area health care institutions and considers hazard vulnerability assessments (HVAs) and historical natural disaster threats.

- Effective surge capacity planning integrates facility plans with a regional disaster response program involving other area health care institutions and considers hazard vulnerability assessments (HVAs) and historical natural disaster threats.

- Funding sources should be available for surge capacity planning, training, research, equipment, supplies, oversight, and process improvement at the local, state and federal levels.

- Legislation should be enacted where necessary to mitigate provider liability issues during crisis situations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Health Courts

Reaffirmed October 2023

Revised April 2017

Reaffirmed April 2011

Originated as CR35 and approved as a policy statement October 2005

The American College of Emergency Physicians endorses the need for comprehensive litigation reform and supports the concept of health courts as an alternative to the current process.

Health courts use specialized adjudicators, independent expert witnesses, and produce more predictable damage awards.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Health Information Technology for Emergency Care

Revised April 2021 with current title

Revised June 2015, August 2008 titled "Health Information Technology," February 2003

Originally approved October 1998 titled "Internet Access"

According to the U.S. Department of Health & Human Services:

"*Health information technology (HIT) involves the processing, storage, and exchange of health information in an electronic environment. Widespread use of HIT within the health care industry will improve the quality of health care, prevent medical errors, reduce health care costs, increase administrative efficiencies, decrease paperwork, and expand access to affordable health care. It is imperative that the privacy and security of electronic health information be ensured as this information is maintained and transmitted electronically.*"[i]

ACEP agrees with these aspirational sentiments. And, while much has been achieved, significant advancements are necessary to realize the full benefits of HIT and reduce inherent HIT overhead burden. The following statements detail many of the necessary conditions for HIT to advance emergency care.

In summary, these include enhanced system design, including more efficient user interface; streamlined implementation; improved system maintenance; use\sharing of data across the continuum of healthcare; and balancing system capabilities that drive revenue with those that facilitate clinical efficiency, effectiveness, and quality.

ACEP believes that:

1. Evaluation, selection, approval, implementation, and ongoing maintenance of technology (including HIT) that impacts the emergency department (ED) and the emergency medicine community should include active involvement of emergency physicians, nurses, clinical informatics specialists, and other emergency care providers.
2. Advancement and broad adoption of HIT offers significant opportunities to improve the quality of emergency care, promote patient safety, reduce medical errors, enhance the efficiency of EDs, and improve patient and end user satisfaction. In compliance with the 21st Century Cures Act[ii], serious efforts should be made to reduce the inherent HIT overhead burden that may be counterproductive to these benefits.
3. Healthcare facilities providing emergency care have a duty to patients, staff, and the community to provide HIT that is suitable for use in

emergency care, facilitates delivery of patient care, conforms to relevant standards[iii], and complies with applicable privacy and security constructs to ensure the capture and availability of relevant health care information.

4. ED modules within enterprise Electronic Health Record (EHR) systems (or best-in-breed standalone Emergency Department Information Systems) must be specifically designed for ED patient care and operations[iv]. These systems should be properly implemented, sufficiently integrated, and well-maintained (including personalization, optimization, ongoing "at-the elbow" training, regular system updates, and adopting enhancements as they become available). Clinical functionality, usability, efficiency, and interoperability should be the primary criteria for system selection and maintenance. Systems should ensure support for ED workflow, clinical accuracy, patient safety, and ED operations. System costs and assessment of return-on-investment should take into account the impact on emergency physicians and other staff productivity and implement solutions to minimize the untoward impact to financial, quality, and productivity.
5. Historical patient information located in EHRs, Personal Health Records (PHR), Health Information Exchanges (HIE), medical alert badges\bracelets\wallet cards, portable electronic devices, and medication databases (including preferred pharmacy) should be readily available for ED patient care in a timely, usable, and secure manner. Interoperability with external systems and participation in HIE by healthcare facilities providing emergency care is strongly encouraged.
6. Access via high-speed Internet connection (including wireless) to secure online tools, hospital policies and procedures, medical references, regional status of hospitals, EMS, mass casualty management systems, and other pertinent information should be readily available.
7. ACEP supports adherence to the Office of the National Coordinator (ONC) terminology, code sets, and syntax standards for data elements in ED and EMS information systems, which enable interoperable data exchange with other EHRs, HIE, and public health databases. In addition to relevant clinical data elements reflected in the United States Core Data for Interoperability (USCDI)[v], ED and EMS information systems should provide an integrated emergency encounter record that timely captures and records accurate data, including granular data on reason for visit, demographics, and language preference; which allows the optimization of practice resources to improve quality and achieve health equity.
8. Emergency physicians, and relevant business associates, must be provided access to relevant EHR and other data necessary for compliance with quality measures reporting, as well as other regulatory and contractual requirements.

References:

[i] US Department of Health & Human Services: https://www.hhs.gov/hipaa/for-professionals/special-topics/health-information-technology/index.html

[ii] 21st Century Cures Act: Pub. L. 114–255. Enacted by the 114th United States Congress December 2016.

[iii] The 2015 Interoperabilty Standards Advisory from the Office of the National Coordinator for Health Information Technology (ONC): http://www.healthit.gov/standards-advisory

[iv] Health Level 7 Emergency Care Special Interest Group: Emergency Department Information Systems Functional Profile. Health Level 7, 2007: http://www.hl7.org/documentcenter/public_temp_2767F812-1C23-BA17-0C9BE83B7C4E00EA/wg/emergencycare/EDIS FP R1.pdf

[v] Office of the National Coordinator for Health Information Technology (ONC): https://www.healthit.gov/isa/united-states-core-data-interoperability-uscdi https://www.healthit.gov/isa/

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

High-Threat Event Casualty Care

Originally approved April 2021

The American College of Emergency Physicians (ACEP) considers provision of tactical casualty care an important component in the planning and response at high-threat events, such as mass gatherings of socio-political focus, civil unrest, active shooter incidents, and other forums where high numbers of injured persons could be or are involved. ACEP reaffirms its commitment to evidence-based decisions in practices of pre-hospital care and emergency medicine, and supports the following principles:

- Timely evacuation of casualties from the point of injury.
- Rapid control of massive hemorrhage.
- Effective airway management to promote oxygenation and ventilation with ongoing respiratory assessment and support.
- Circulation management to promote perfusion balanced with permissive hypotension with ongoing circulatory assessment and support.
- Prevent/reverse hypothermia.
- Timely transport to further definitive trauma care.

These principles are consistent with multiple relevant resources and curricula, including the 2016 National Academies of Sciences, Engineering and Medicine report, "A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths after Injury," Tactical Combat Casualty Care (TCCC), Committee for Tactical Emergency Casualty Care (C-TECC), and the National Tactical EMS Initiative and Council (NTIC) competencies. These resources, curricula, and competencies seek to optimize reduction in morbidity and mortality realized in military conflict medical response and translate them to civilian tactical EMS and other EMS operations at high threat events.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Hospital Disaster Physician Privileging

Reaffirmed October 2023

Revised October 2017,
January 2010 with current title

Originally approved February 2003 titled, "Hospital Disaster Privileging"

The American College of Emergency Physicians (ACEP) believes that all hospitals should have a process in place which allows emergency privileging of additional physician staff in the event of activation of the hospital disaster (emergency preparedness) plan. Should it be necessary to activate the disaster plan, additional physician support may be needed immediately to supplement the existing medical staff. A Hazard Vulnerability Assessment (HVA) or other similar evaluation should be undertaken to proactively identify potential emergencies, including any circumstances unique to the particular hospital that could suddenly affect physician demand or supply. It should also include the hospital's role in the community and the potential of displacing the medical staff in the event of hospital evacuation to an alternate site or hospital through community and mutual aid agreements.

The Joint Commission (TJC) has put forth standards (TJC Standard EM.12.02.03) to address the issue of Hospital Disaster Physician Privileging. During disasters, the hospital may grant disaster privileges to volunteer licensed independent practitioners (LIP). As defined by TJC: A disaster is an emergency that, due to its complexity, scope, or duration, threatens the organization's capabilities and requires outside assistance to sustain patient care, safety, or security functions.

Therefore, ACEP agrees with and reaffirms the TJC Hospital Accreditation Standards, EM.12.02.03 recommendations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2024

Human Resources Concepts Governing Physician Medical Directors of EMS

Reaffirmed March 2024

Originally approved January 2017

A joint policy statement of the American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the American Academy of Emergency Medicine (AAEM)

Physicians who answer the call to serve as an EMS medical director make significant investments to provide that necessary leadership to an EMS agency or system. These physicians provide vital oversight of EMS and often perform clinical activities in the EMS environment. Just as the EMS medical director provides significant support to an EMS program or system, EMS must also appropriately support the role of the EMS medical director.

ACEP, NAEMSP, and AAEM believe that:

- CONTRACT: The role of an EMS medical director should be explicitly and contractually defined between the EMS service and the EMS physician. Elements of the position that require explicit description in a written agreement include qualifications, authority, reporting structure or chain of command, responsibilities, protection, compensation, term of service, and severability.

- AUTHORITY: EMS medicine is a recognized subspecialty practice of medicine. As such, the EMS medical director should be assured a scope of authority that encompasses all clinical aspects of EMS, is commensurate with their level of responsibility, and that is contractually defined.

- COMPENSATION: The EMS service must provide compensation to the EMS medical director at a mutually agreeable value commensurate with the responsibilities held by the EMS medical director.

- PROTECTION: The EMS service should ensure the EMS medical director has appropriate protection commensurate with their

responsibilities and risk profile. Such protection must include medical malpractice insurance and liability protection, errors and omissions coverage, and may include line of duty injury and death benefits and hazardous duty compensation commensurate with the exposure and risk assumed by the physician. These protections must specifically cover the responsibilities and activities of the EMS medial director as defined in contract. Such protections must either be agency-provided or the agency should provide remuneration to the physician for physician-owned coverage. Securing these protections is paramount to the EMS medical director.

- DUE PROCESS: An EMS medical director must be afforded appropriate due process if performance or professional concerns are identified by the EMS service.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Human Trafficking

Revised February 2020

Originally approved
April 2016

Human trafficking is a human rights violation affecting individuals of all ages and has significant implications for the physical, sexual, and psychological health of those affected. Trafficking victims are treated for acute injuries and illnesses in emergency departments more often than in any other health care facility and thus emergency physicians are in the best position to assess, intervene, and refer for assistance. Identification and assessment of victims can be difficult, as human trafficking can encompass abuse in many different forms including neglect, intimidation, physical, sexual, emotional, and financial abuse.

ACEP recommends that:

- Emergency physicians be familiar with potential signs, symptoms and indicators of human trafficking in both adult and pediatric patients.
- Emergency personnel maintain a high index of suspicion when evaluating patients of any age who appear to be at risk for abuse and violence and assess for specific indicators of trafficking.
- In order to minimize the potential for re-traumatization, potential victims of human trafficking should be evaluated using an age appropriate, culturally relevant and survivor-centered approach with an understanding of how trauma may affect an individual's response to care.
- Hospitals and emergency departments (EDs) have protocols in place to address the medical, psychological, safety, and legal needs of the victims of human trafficking. As many of the needs of victims of human trafficking may not be addressed in an ED visit, this includes referral to appropriate resources.
- Emergency practitioners be aware of institutional protocols and resources to guide a safe and multidisciplinary approach to helping identified victims, including appropriate referrals.
- Emergency medical services (EMS), medical schools, and emergency medicine residency curricula should include education and training in recognition, assessment, documentation, and interventions for patients surviving human trafficking.
- ED and EMS staff receive ongoing training and education in the identification, management, and documentation of human trafficking victims.

- Hospitals, EDs, and EMS maintain appropriate education regarding state and federal legal requirements for reporting human trafficking, with particular attention to mandated reporting duties related to child abuse, elder abuse, and abuse of persons with disability.
- Emergency personnel be afforded protected or anonymous reporting.
- Emergency physicians give adult victims of trafficking autonomy to choose when and how to report or seek help.

ACEP supports:

- Appropriate measures to prevent human trafficking in the community.
- Hospital, ED, and EMS participation in collaborative interdisciplinary approaches for the recognition, assessment, and assistance of human trafficking victims. These approaches include the development of policies and protocols that account for the potential need to interface with outside entities such as local government agencies, law enforcement agencies, and other relevant legal and social service organizations.
- Epidemiological research regarding the incidence and prevalence of human trafficking, as well as clinical research to identify best practice approaches and interventions in the prevention, detection, assessment, and assistance of human trafficking victims.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Immunization of Adults and Children in the Emergency Department

Revised October 2020, June 2015

Originally approved January 2008, replacing "Immunizations in the Emergency Department" (2002), "Immunization of Pediatric Patients" (2000), and "Immunization of Adult Patients" (2000)

The American College of Emergency Physicians (ACEP) recognizes that vaccine-preventable infectious diseases have a significant effect on the health of adults and children. The emergency department (ED) is used frequently for health care by many inadequately vaccinated adults and children who are at risk for such diseases. EDs serve as a primary interface between hospitals and the community at large and have been on the frontlines of infectious or biological threats. To promote the health and well-being of individual patients and the population, ACEP thus supports the following principles:

- Immunization against vaccine-preventable diseases, including the seasonal influenza vaccine, should be ensured for all physicians, nurses, and advanced practitioners in the absence of appropriate medical contraindications or exemptions.
- ED physicians, nurses, and advanced practitioners should have current knowledge of, or access to, recommended vaccination administration schedules. Utilization of resources embedded within the electronic medical record or through web or app-based resources is encouraged.[1]
- Electronic vaccination records should be accessible to all emergency physicians.
- EDs should establish relationships with public health entities, urgent care and retail clinics, managed health care organizations, private physicians, and/or local pharmacies to ensure rapid referral of under-vaccinated patients. Information should be tailored to the community served and integrated into discharge instructions.
- When local resources are not readily available for vaccinating under-vaccinated patients or concern by physicians, nurses, or advanced practitioners exists regarding the ability of a patient to utilize available resources, providing vaccinations to these patients in the ED may save lives and prevent further disease.
- Emergency vaccination for tetanus, and postexposure treatment for rabies should be available in the ED for patients of all ages.

- Patients who receive immunization(s) in the ED should be provided with appropriate education regarding the vaccine(s) [eg, CDC Vaccine Information Statement [2]] and encouraged to report adverse events through the Vaccine Adverse Event Reporting System (VAERS). [3,4]

- In cases of outbreaks, epidemics or pandemics of vaccine-preventable diseases (including emerging infections and biological threats), emergency physicians should assist health care facilities in partnering with public health agencies to develop and implement mass vaccination programs.

References:

1. Centers for Disease Control and Injury Prevention Vaccine Schedules App for Health Care Providers. Available at: https://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html. Accessed: September 2020.

2. Centers for Disease Control and Injury Prevention Vaccine Information Statements (VISs). Available at: https://www.cdc.gov/vaccines/hcp/vis/index.html. Accessed: September 2020.

3. Reporting of Vaccine-Related Adverse Events. American College of Emergency Physicians. Available at: https://www.acep.org/patient-care/policy-statements/reporting-of-vaccine-related-adverse-events.

4. Centers for Disease Control and Injury Prevention. Vaccine Adverse Event Reporting System. Available at: https://vaers.hhs.gov/. Accessed: September 2020.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Impact of Climate Change on Public Health and Implications for Emergency Medicine

Originally approved June 2018

Climate change has significant impact on human health, health care systems, and public health infrastructure.[1,2,3] Human health is impacted by the increased frequency and severity of diseases exacerbated by changes in the environment and extreme weather events, in addition to the introduction of unprecedented pathology and worsening of existing chronic disease. Many of these associated health impacts have a direct result in the provision of emergency medical care and, therefore, are directly relevant to the practice of emergency medicine.

As such, the American College of Emergency Physicians (ACEP) supports collaborating with public health agencies and other stakeholders to:

- Raise awareness of the short- and long-term implications of climate change in population health and its effect in the practice of emergency medicine.
- Engage in research examining the effects of climate change on human health, health care systems, and public health infrastructure.
- Advocate for policies and practices to mitigate and address the effects of climate change on human health, health care systems, and public health infrastructure.
- Expand and improve upon regional surveillance systems of emerging diseases related to extreme weather events linked to climate change.
- Advocate for initiatives to reduce the carbon footprint of emergency departments and their affiliated institutions through energy conservation and health care waste reduction and/or recycling.
- Educate patients on appropriate precautions in extreme weather, avoidance of exacerbation triggers, early identification of exacerbations, and temporizing measures when needed.

References

1. Pachauri RK, Meyer LA (Eds.). Climate Change 2014: Synthesis Report of the IPCC Fifth Assessment Report. Intergovernmental Panel on Climate Change (IPCC): Geneva, Switzerland. 2014. Accessed on

April 25, 2018 at http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_All_Topics.pdf

2. Balbus J, Crimmins A, Gamble JL. Ch. 1: Introduction: Climate Change and Human Health. In: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. U.S. Global Change Research Program: Washington, DC; 2016.
3. Sheikhbardsiri H, Raeisi AR, Nekoei-Moghadam M, et al. Surge capacity of hospitals in emergencies and disasters with a preparedness approach: a systematic review. *Disaster Med Public Health Prep*. 2017;11(5):612-20.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Implicit Bias Awareness and Training

Originally approved October 2021

The American College of Emergency Physicians (ACEP) is committed to supporting diversity, inclusion, and equity in all aspects of the practice of medicine. Implicit bias refers to attitudes and associations that an individual holds about others that exist outside their conscious awareness yet influence their behavior. ACEP recognizes that implicit bias affects the quality of medical care patients receive and patient outcomes. Implicit bias also creates inequities in opportunities for all members of the healthcare team including within the realms of education, hiring, promotion, leadership, and compensation. These inequities remain pervasive within emergency medicine, and impact physicians at all levels of training from medical students to attending physicians. Improving these inequities is vital to the practice of medicine and necessitates a larger cultural change not only amongst physicians within the field of emergency medicine, but inclusive of all members of the healthcare team across all specialties. ACEP strongly recommends inclusion of implicit bias training for emergency physicians at all practice levels and encourages the inclusion of implicit bias training for all members of the healthcare team.

To this effect, ACEP recommends implementation of the following strategies:

- Incorporate effective implicit bias training into the continuing education of all emergency medicine physicians and trainees including instruction in bias recognition and mitigation techniques
- Strive to include a diverse group of representatives in all interviewing, recruiting, hiring, and promotional processes
- Implement policies and practices that support transparency in hiring, recruitment, and promotion regarding compensation, benefits, and clinical as well as non-clinical responsibilities
- Support expanding opportunities for promotion and career advancement through mentorship, sponsorship, and physician development initiatives
- Employ processes to identify implicit bias and mitigate its effects on the assessments of trainees including shift or rotation evaluations, interview evaluations, and the formation of rank lists
- Incorporate methods to address the influence of implicit bias on patient care and patient outcomes as a vital element of continuous quality improvement within the healthcare system
- Demonstrate sustained efforts to increase awareness of implicit bias and engage in bias reduction strategies

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Interference in the Physician-Patient Relationship

Originally approved June 2022

The American College of Emergency Physicians (ACEP) believes that emergency physicians must be able to practice high quality, objective evidence-based medicine without legislative, regulatory, or judicial interference in the physician-patient relationship.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

International Development and Promotion of Emergency Medicine

Reaffirmed February 2018 and October 2007

Approved June 2001

The American College of Emergency Physicians (ACEP) supports the international development of emergency medicine as a clinical and academic specialty. ACEP supports the development and promotion of emergency medicine internationally by taking a leading role as a founding member of the International Federation for Emergency Medicine (IFEM), with the stated purpose of "promoting at an international level, interchange, understanding, and cooperation among physicians practicing emergency medicine."

ACEP supports the following international initiatives:

- The availability of appropriate emergency services in all countries;
- Global activities focusing on injury control;
- Development and promotion of standards of care in resuscitation;
- Development of out-of-hospital care systems;
- Development of emergency medicine as an academic specialty;
- Collegial exchange and collaboration among emergency physicians of all countries; and
- Advocacy for international health issues.

ACEP encourages the promotion of emergency medicine in other countries and supports expanding membership in IFEM to those countries that can meet the membership criteria set by IFEM.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Interpretation of Diagnostic Imaging Tests

Revised June 2018 with current title, February 2013, June 2006 titled "Interpretation of Imaging Diagnostic Studies"

Reaffirmed October 2000

Revised September 1996

Originally approved titled, "Interpretation of Diagnostic Studies" March 1990

The American College of Emergency Physicians (ACEP) believes that the communication of diagnostic study results is critical to the evaluation and management of emergency department (ED) patients. Such communication should be performed contemporaneously with the ED visit to guide ongoing treatment decisions and promote effective provider and patient communication. Organizations should create service standards and operating procedures that clarify testing availability, timeliness, interpretation responsibility (including the role of residents), communication methods for preliminary and final results, as well as quality assurance, discrepancy follow-up, and incidental finding communication.

Interpretation of critical testing must be available 24 hours per day, 7 days per week. Interpretation should be completed by a provider who meets or exceeds the requirements of the institution in which the patient is receiving care. Off-site interpretation may be utilized, provided the process follows institutional and American College of Radiology (ACR) guidelines.[1] It is preferred that off-site radiologists be credentialed by the hospital medical staff where the studies are performed. Contemporaneous interpretation may be done by the emergency medicine providers or by another specialist within the limits of the training, experience, and competence of that physician. Quality assurance of non-radiology interpretations should follow institutional guidelines.

Per U.S. Centers for Medicare & Medicaid Services (CMS) guidance,[2,3] the provider performing contemporaneous interpretations of diagnostic studies is entitled to reimbursement for such interpretations.

Interpretations should be available immediately to the ordering provider or their designee in accordance with institutional guidelines. Organizations utilizing electronic medical records (EMR) and picture archiving and communication systems (PACS) should consider full integration, allowing for bidirectional communication, full versioning of results reporting, and full access to digital images.

Organizations should make allowances for the importation, interpretation, and storage of outside images and/or results when critical or beneficial to patient care or safety. Reinterpretation of outside images should be available when

dictated by patient care needs or at the request of the treating provider.

Organizations should assure that results are communicated in a method commensurate with their criticality. Results suggesting the need for immediate or urgent interventions, or otherwise considered critical, must be readily identifiable in the radiologist's report and verbally communicated in real-time via closed loop communication to the ordering provider or their designee. Non-routine communications should follow ACR practice parameters.[4]

When patient needs dictate, preliminary reports may be required. Organizations must assure that all radiologist preliminary reports are readily identifiable, time stamped and permanently archived in the versioning of the final report accompanying the study. The radiologist must report any changes from the preliminary report in a timely, reliable, time stamped fashion to the ordering provider or their designee and document this in their report. Findings that may be seriously adverse to the patient's health but do not require immediate attention must be communicated in a reliable, time stamped fashion to the ordering provider or their designee and documented in their report. Organizations should provide clear guidance and support for the management of patient communication as it pertains to changes in findings, diagnosis, or need for further intervention, including the communication of incidental findings that were not available when the patient was in the ED.

If the emergency physician believes that an urgent consultation with a radiologist is needed for the interpretation of a diagnostic study, that consultant must be immediately available for discussion and/or consultation with the treating physician.

Whether the consultation is provided from a hospital staff physician or by an external contracted consultant, this physician should be board certified in radiology and licensed in the state where the images are obtained and should meet or exceed the credentialing requirements for physicians credentialed by the local health care facility.

References:

1. American College of Radiology. Radiologist Coverage of Imaging Performed in Hospital Emergency Departments, ACR Practice Parameter. Adopted 2000 (Resolution 32), Revised 2003 (Resolution 6), Amended 2006 (Resolution 36), Amended 2007 (Resolution 13), Revised 2008 (Resolution 34), Revised 2013 (Resolution 24) Amended 2014 (Resolution 39). Accessed April 2, 2018.
2. Chapter 13: Medicare Claims Processing Manual. U.S. Centers for Medicare & Medicaid Services web site. http://www.cms.gov/RegulationsandGuidance/Guidance/Manuals/downloads/clm104c13.pdf. Revised July 28, 2017. Accessed April 2, 2018.
3. Diagnostic X-ray Tests, Diagnostic Laboratory Tests, and Other Diagnostic Tests: Conditions, 42 C.F.R. § 410.32 (2017).
4. American College of Radiology. Communication of Diagnostic Imaging Findings, ACR Practice Parameter. Adopted 1991 (Resolution 5), Revised 1995 (Resolution 10), Revised 1999 (Resolution 27), Revised 2001 (Resolution 50), Revised 2005, 2010, 2014 (Resolution 11). Accessed April 2, 2018.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Interpretation of EMTALA in Investigations, Enforcement, and Medical Malpractice Litigation

Revised January 2021 with current title

Originally approved June 2018 titled "Interpretation of EMTALA in Medical Malpractice Litigation"

Background

The Emergency Medical Treatment and Labor Act (EMTALA) requires hospital emergency departments to provide a medical screening examination to anyone who comes to the hospital seeking an examination or treatment for a medical condition, in order to determine the presence or absence of an emergency medical condition. If an emergency medical condition is determined to exist, the law requires the hospital to provide treatment to try to stabilize the condition, or, in some specific situations, allows for the patient to be transferred to achieve that stabilization.

Evolution

Since EMTALA's passage, EMTALA investigators and reviewers, as well as trial courts dealing with medical malpractice litigation, have vastly broadened the interpretation of the terms "emergency medical condition" and "to stabilize" far beyond the original legislative intent and legal definitions cited in the statute. Similarly, some expanded enforcement efforts by the Centers for Medicare and Medicaid Services (CMS) and the Office of the Inspector General (OIG) can be considered as inconsistent with the EMTALA statute, Code of Federal Regulations and CMS-written EMTALA guidance.

Additionally, Congress has authorized a plaintiff "private right of action" against hospitals resulting from EMTALA violations. Such actions have resulted in court decisions expanding the scope of EMTALA by altering definitions, expanding intent, and in some instances creating conflicting and contradictory rulings that may be antithetical to good patient care.

Recommendations

The American College of Emergency Physicians believes that:

- With respect to EMTALA investigations or when considered in conjunction with medical malpractice litigation, EMTALA should not be interpreted or applied to extend beyond the actual definitions and

applications specifically stated in the federal statute.

- Congress should provide definitive statutory clarity to EMTALA to resolve the disparities that now exist between CMS and the courts.
- EMTALA statutes should be investigated, reviewed and equitably enforced by CMS and OIG as written by Congress and interpreted according to applicable federal appellate court decisions.

Reference

Title 42, Chapter 7, Subchapter 18, Part E, Section 1395dd of the U.S. Code, "Examination and Treatment for Emergency Medical Conditions and Women in Labor"

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2013

Intoxication and Motorized Recreational Vehicle and Watercraft Operation

Revised and approved by the ACEP Board of Directors titled, Intoxication and Motorized Recreational Vehicle and Watercraft Operation" February 2013

Reaffirmed by the ACEP Board of Directors October 2006

Approved by the ACEP Board of Directors titled, "Watercraft Safety and Intoxication" September 2000

Originated as CR037 titled "Drunk Boating" September 1989 and rescinded September 2000

The American College of Emergency Physicians (ACEP) supports efforts involving public education and legislation to ensure safe and responsible operation of motorized recreational vehicles* and watercraft. Operators and passengers should be educated about the dangers of intoxication with drugs or alcohol while engaged in motor vehicle or watercraft operation. Legislation should be enacted enabling the use of reasonable actions, including impoundment of property to assure safe operation of motorized vehicles and watercraft.

ACEP supports the adoption and enforcement of legislation prohibiting drug- or alcohol-impaired operation of motorized vehicles and watercraft. Such legislation should mandate that a blood alcohol concentration (BAC) of 0.08 g/dl or greater is per se evidence of operating a motorized vehicle or watercraft while impaired and that any measurable level of BAC while operating a motorized vehicle or watercraft shall be illegal in persons younger than the legal drinking age in each state.

*Motorized recreational vehicles and watercraft can include mopeds, mini-bikes, all-terrain vehicles (ATV), go-karts, snowmobiles, ultra-light aircraft, boats, jet skis, and other such vehicles.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Ketamine Use in Prehospital and Hospital Treatment of the Acute Trauma Patient

Originally approved
April 2020

A joint policy statement of the American College of Surgeons Committee on Trauma (ACS-COT), the American College of Emergency Physicians (ACEP), the National Association of State EMS Officials (NASEMSO), the National Association of EMS Physicians (NAEMSP) and the National Association of EMTs (NAEMT)

Available online at
https://www.tandfonline.com/doi/full/10.1080/10903127.2020.1801920

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Law Enforcement Information Gathering in the Emergency Department

Revised June 2023, June 2017, April 2010

Originally approved September 2003

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper "Law Enforcement Information Gathering in the Emergency Department: Legal and Ethical Background and Practical Approaches"

The American College of Emergency Physicians (ACEP) believes that emergency physicians have a fundamental professional responsibility to care for all patients seeking emergency medical treatment and to protect the confidentiality of their patients' personal health information accessed in the process. Federal and state laws, including the Emergency Medical Treatment and Labor Act (EMTALA) and the health information privacy regulations implemented under the Health Insurance Portability and Accountability Act (HIPAA), articulate and reinforce this responsibility.

ACEP recognizes that law enforcement officials perform valuable functions in the emergency department (ED), and that one of these functions is investigation of criminal acts. As part of these investigations, law enforcement officials may request personal health information (PHI) gathered in the ED. Emergency physicians may honor these requests only under the following circumstances:

1. The patient consents to release of the requested PHI to law enforcement officers, or
2. Applicable laws or regulations mandate the reporting of the requested PHI to law enforcement officers, or
3. Law enforcement officers produce a subpoena or other court order requiring release of the requested PHI to them.

Law enforcement officers may, in some situations, present search warrants or other court orders as grounds for requesting or directing that emergency physicians perform physical examinations, collect physical evidence, perform diagnostic tests, or conduct body cavity searches on ED patients who refuse these interventions.

These situations present emergency physicians with the obligation to respect patients' refusals of treatment, to promote trust in the therapeutic relationship, and to protect patients from harm. This can be in contrast to the obligation to obey legal authorities and to carry out socially imposed mandates to promote public health and public safety.

ACEP supports emergency physicians in exercising their considered judgments regarding which set of obligations is more compelling in these specific situations.

ACEP believes that patients have the right to consent to or refuse examinations or evidence gathering. If patients do not consent, and there is no medical indication for a procedure, the procedure should not be performed in the ED. Emergency physicians may conscientiously refuse to carry out or comply with legal orders that they deem violate emergency patient and privacy-related rights or jeopardize the welfare of their patients, recognizing that there may be legal or professional repercussions for these decisions. These repercussions may include contempt of court or malpractice claims.

In their interactions with ED patients, law enforcement officers may use video or audio recording devices. ACEP believes that because these recordings may include interaction or communication between ED patients and physicians or other ED staff, they should only be made with the consent of all parties.

Law enforcement information gathering activities in the ED should not interfere with essential patient care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2020

Leadership and Volunteers Conduct Policy

Originally approved June 2020

In accordance with its *Non-Discrimination and Harassment Policy* for members, the American College of Emergency Physicians (ACEP) is also committed, as a policy matter, to ensuring that its Board members, volunteers, employees and consultants can perform their valuable services to ACEP free of harassment and discrimination.

Prohibited Harassment and Discrimination

Directors, Committee members, Councillors, and other ACEP volunteers (collectively, "Covered Persons") should refrain from conduct that is discriminatory, harassing, coercive, or disruptive, including sexual harassment, in their dealings with ACEP staff, consultants, vendors, volunteers, or other individuals who provide support to ACEP or with whom they interact due to their position with ACEP (e.g., Board, Council, Committee, Section, Task Force or other volunteer service). For purposes of this Policy, prohibited harassment includes unwelcome actions, words, jokes, or comments based on any legally protected characteristic, such as an individual's sex, race, color, national origin, age, religion, mental or physical disability, sexual orientation, gender identity or expression, pregnancy, or military or veteran status. Some examples of impermissible behavior include mocking an individual's religious beliefs, using racially biased epithets, making uninvited sexual advances or propositions, telling obscene jokes, discussing sexual activities, or engaging in unwelcome physical conduct, including touching, assaulting, or impeding or blocking movements.

Responding to Conduct in Violation of Policy

Covered Persons shall report any and all concerns of sexual or other prohibited harassment or retaliation in violation of this Policy to the President or to ACEP's General Counsel. If the concern involves the President, the Board Chair may be notified instead. The President (or Board Chair) should promptly consult with the General Counsel upon receipt of any report of a violation of this Policy. The Executive Director shall be notified of any report of a Policy violation brought by a staff member. All reports of sexual and other prohibited harassment will be taken seriously, evaluated in a

prompt manner, treated with respect, and maintained in confidence to the extent practicable. The President or Board Chair shall oversee any investigation into an alleged violation of this Policy, in consultation with the General Counsel.

Covered Persons must cooperate with any investigation into alleged violations of this Policy, including by providing truthful information to the investigator. Covered Persons must not engage in retaliation of any kind against any individual who, in good faith, reports or participates in the investigation of an alleged violation of this Policy.

With respect to allegations of harassment received from staff, Covered Persons shall, at the request of the Executive Director or of the General Counsel, refrain from initiating communication or other contact with a complainant or witness during the investigation or, as deemed appropriate by the Board of Directors, as an element of resolution of the investigation.

Any Board member found to have engaged in prohibited discrimination and/or harassment may be subject to disciplinary action by the Board of Directors, as determined by majority vote of the Board, or removal from the Board in accordance with the procedures set forth in Article X, Section 3 of the Bylaws. Officers found to be in violation of the policy may be removed from office in accordance with the procedures in Article X, Section 3 of the Bylaws. A Councillor's violation of this Policy may result in removal from the Council, in accordance with the governance documents or policies of the Councillor's sponsoring body. Any Committee member or other ACEP volunteer, such as a Section member or member of an appointed Task Force, may also be removed from their volunteer position by the President if an allegation of a violation of this policy is received that ACEP, in its discretion, considers credible.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Management of the Patient with the Complaint of Sexual Assault

Reaffirmed February 2020,
April 2014,
October 2008

Revised October 2002

Reaffirmed June 1999

Revised December 1994

Originally approved
January 1992

The sexually assaulted patient, who may be an adult or child of either sex, presents special medical, psychological, and legal needs. ACEP believes that all patients who report a sexual assault are entitled to prompt access to emergency medical care and competent collection of evidence that will assist in the investigation and prosecution of the incident. ACEP has therefore developed the following guidelines:

- With the cooperative efforts of local governments, law enforcement agencies, hospitals, courts, and other relevant organizations, each county, state or other geographic area should establish a community plan to deal with the sexually assaulted patient. The plan should ensure that capable, trained personnel and appropriate equipment are available for treating sexual assault patients.
- Each community plan should address the medical, psychological, safety, and legal needs of the sexually assaulted patient. The plan should provide for counseling and should specifically address pregnancy and testing for and treatment of sexually transmissible diseases, including HIV.
- Each hospital should provide for access to appropriate medical, technical, and psychological support for the patient. A community may elect to establish, under the supervision of a physician, an alternative medical site, which specializes in the care of the sexually assaulted patient and provides medical and psychological support capabilities when no other injuries are evident.
- A victim of sexual assault should be offered prophylaxis for pregnancy and for sexually transmitted diseases, subject to informed consent and consistent with current treatment guidelines. Physicians and allied health practitioners who find this practice morally objectionable or who practice at hospitals that prohibit prophylaxis or contraception should offer to refer victims of sexual assault to another provider who can provide these services in a timely fashion.
- Specially trained, nonphysician medical personnel should be allowed to perform evidentiary examinations in jurisdictions in which evidence collected in such a manner is admissible in criminal cases.

- Physicians and trained medical staff who collect evidence, perform in good faith, and follow protocols should be immune from civil or criminal penalties related to evidence collection, documentation of findings, and recording of the patient's subjective complaints.
- For the special diagnostic and therapeutic needs of the pediatric patient, a community plan should provide for primary referral centers with expertise and ancillary social services that support a multidisciplinary approach.
- As part of its ongoing quality management activities, the hospital should establish patient care criteria for the management of the sexually assaulted patient and monitor staff performance.
- ED staff should have ongoing training and education in the management of the sexually assaulted patient.
- ACEP supports appropriate measures to prevent sexual assault in the community.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Maximizing the Potential of Women in Emergency Medicine

Reaffirmed February 2020

Originally approved October 2014

The American College of Emergency Physicians (ACEP) is committed to supporting women over the course of their emergency medicine careers and recommends that employers adopt policies and practices that will enable women to have productive and sustained careers. Such policies will enable our specialty to maintain a diverse and talented workforce, thereby strengthening the field as a whole.

- Employers should implement policies and practices aimed at ensuring unbiased recruitment and hiring along with parity in advancement and compensation among employees.
- Employers should promote and support networking and mentorship opportunities for their women physicians.
- Employers should strive to implement family-supportive practices* that further the professional advancement and retention of employees who have childcare and other dependent care responsibilities.
- Employers should seek to create a culture in which family-supportive policies are visible, easily accessible, and are used without fear of penalty or stigma. This culture should be evident at the time of recruitment.
- Employers should adopt policies to support physicians during significant life events (eg, pregnancy, childbirth, adoption, major medical illness).
- The needs of pregnant and postpartum women should be supported with flexible scheduling options and adequate lactation facilities.
- ACEP believes that physicians should not have to choose between their careers and their families and that employers' efforts to recognize and consider all aspects of physicians' lives ultimately furthers a medical career.

* ACEP Policy Statement: Family and Medical Leave.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Mechanical Ventilation

Reaffirmed February 2023

Originally approved October 2017

Airway management is a cornerstone of emergency medicine practice and one of the expert skills of the emergency physician. The emergency physician should not only be adept at endotracheal intubation but also familiar with the strategies involved in the initial management of mechanical ventilation. Choosing an appropriate ventilator strategy will ensure the best clinical outcome and avoid complications, such as barotrauma, oxygen toxicity, and ventilator-associated pneumonia. This is particularly relevant in the setting of crowding, prolonged emergency department (ED) boarding times, and rise in the number of ED-based critical care units. A collaborative team effort that includes nursing and respiratory care is essential to providing optimal care of the ventilated patient.

The American College of Emergency Physicians (ACEP) is the authoritative body for the establishment of guidelines for rapid sequence intubation and mechanical ventilation in the emergency setting. To promote the safe and effective use of mechanical ventilation in ED patients, ACEP recommends the following:

- The mechanical ventilation strategy should be individualized with consideration of the patient's underlying disease process. Consider lung protective strategies that include limiting tidal volume, maintaining lung recruitment, limiting airway pressures, and minimizing oxygen toxicity. Providers may also follow measures of lung compliance, such as plateau pressure or driving pressure, to help reduce incidence of barotrauma and lung injury.

- Continuous quantitative waveform capnography (end tidal carbon dioxide) monitoring is recommended, and a post-intubation blood gas measurement may be obtained to ensure appropriate ventilator settings (eg, respiratory rate, tidal volume, fraction of inspired oxygen [FiO_2]).

- Patients should be maintained on appropriate doses of analgesia and sedation to maintain comfort while on mechanical ventilation.

- Unless contraindicated, elevate the head of the bed to at least 30 degrees to prevent ventilator-associated pneumonia.

- As prolonged periods of hyperoxia may lead to iatrogenic injury, titrate down the FiO_2 to maintain appropriate oxygen saturation.

Resources

Brower RG, Matthay MA, Morris A, et al. For the Acute Respiratory Distress Syndrome Network. Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the acute respiratory distress syndrome. *N Engl J Med*. 2000;342:1301-1308.

Spiegel R, Mallemat H. Emergency department treatment of the mechanically ventilated patient. *Emerg Med Clin N Am.* 2016;341:63-75.

Weingart SD. Managing initial mechanical ventilation in the emergency department. *Ann Emerg Med*. 2016;68:614-617.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Medical Cannabis

Originally approved
June 2019

The American College of Emergency Physicians (ACEP) believes that scientifically valid and well-controlled clinical trials conducted under federal investigational new drug applications are necessary to assess the safety and effectiveness of all new drugs, including cannabis and cannabis derivative products, for medical use. Currently, in many states, cannabis and related cannabinoids are being recommended for patient use by physicians when little evidence has been provided regarding appropriate indications, efficacy, dosages, and precautions of these drugs. ACEP supports the rescheduling of cannabis and encourages the Food & Drug Administration (FDA), Drug Enforcement Administration (DEA), and other appropriate organizations to facilitate scientifically valid, well-controlled studies of the use of cannabis and cannabis derivative products for treatment of disease and of its impact on societal health.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2020

Medical Neutrality

Originally approved June 2020

ACEP supports medical neutrality, under the principles of the Geneva Convention, for the sick and wounded in all countries and all health care workers, when these workers coordinate health care activities through established channels via non-governmental organizations, government organizations, or other official response agencies.

- As prolonged periods of hyperoxia may lead to iatrogenic injury, titrate down the FiO_2 to maintain appropriate oxygen saturation.

Resources

Brower RG, Matthay MA, Morris A, et al. For the Acute Respiratory Distress Syndrome Network. Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the acute respiratory distress syndrome. *N Engl J Med*. 2000;342:1301-1308.

Spiegel R, Mallemat H. Emergency department treatment of the mechanically ventilated patient. *Emerg Med Clin N Am*. 2016;341:63-75.

Weingart SD. Managing initial mechanical ventilation in the emergency department. *Ann Emerg Med*. 2016;68:614-617.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Medical Practice Review and the Practice of Medicine

Revised January 2024

Originally approved May 2018

The American College of Emergency Physicians (ACEP) endorses the following principles regarding medical opinions about the appropriateness and/or quality of medical care which are made for purposes other than the delivery of medical care:

- Opinions regarding the appropriateness and quality of medical care, including but not limited to expert witness testimony, peer review, utilization review and decisions regarding insurance coverage involving care authorization or care denial, should constitute the practice of medicine as defined in state Medical Practice Acts and should be limited to currently licensed physicians whose practice is governed by the respective state's Board of Medicine.

- Opinions, not related to internal group operations, regarding the appropriateness of medical care should be made by physicians who practice or have practiced in the same specialty, who possess an active, unrestricted license (preferably in the same state), and with at least comparable certification and expertise as the physician whose medical care is under review.

- Baseless, knowingly false, or materially misleading opinions regarding diagnoses, treatment decisions, and the standard of care are a violation of a physician's professional code.

- Physicians engaged in reviewing the quality of medical care provided by another physician should be members of a recognized professional organization that conducts or supports peer review, and their opinions, decisions, testimony, and qualifications should be subject to review.

- Opinions regarding the appropriateness of medical care that are without basis, that are knowingly false, or that are materially misleading should be subject to disciplinary actions by medical licensing boards and/or specialty societies.

ACEP supports working in conjunction with national medical certifying boards and state medical licensing boards to address any variation in medical practice that falls outside accepted professional standards or that violates state Medical Practice Acts.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Medical Services Coding

Revised January 2019

Reaffirmed June 2013

Revised April 2006 with current title

Reaffirmed June 1999

Originally approved September 1986 as a Council Resolution titled, "Coding Reform"

Given the establishment of a uniform transaction code set by the Healthcare Insurance Portability and Accountability Act of 1996 (HIPAA), the American College of Emergency Physicians (ACEP) believes that all private, state, and federal health care payers should employ a national uniform system for identifying, measuring, and reporting physician or other qualified health care professional services. Consequently, there should be ongoing efforts to develop and maintain procedures and performance codes, definitions, documentation requirements, and other associated policies regarding medical services in accordance with the following:

- Utilizing appropriate physician or other qualified health care professional experience and expertise in such processes;
- Fostering the implementation of reasonable definitions and recognition policies among all payers nationwide;
- Establishing, modifying, or deleting codes in a timely manner, based on changing medical practice; and
- Having such codes, definitions, documentation requirements, and other associated utilization and reporting policies readily available whenever requested.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2017

Medical Transport Advertising, Marketing, and Brokering

Revised October 2017, October 2015 with current title

Approved June 2008 titled "Air Ambulance Medical Transport Advertising and Marketing"

A joint policy statement of the American College of Emergency Physicians, the National Association of EMS Physicians®, the Air Medical Physician Association, the Association of Air Medical Services, and the National Association of State EMS Officials

Position

Patient care and outcomes are optimized by using medical transport services that are officially recognized by the appropriate regulatory health care authority and have robust physician medical oversight and ongoing quality management. Only medical transport services with these credentials should advertise and/or market themselves as providing medical transport services. Brokers should not advertise as medical transport services and must identify themselves as brokers, admitting that another entity completes the transport and providing transparency regarding their involvement with arranging the transport.

Recommendations

- Every national or state regulatory authority should develop statutes regulating the advertising and/or marketing of medical transport services.
- These statutes should only allow an entity to advertise and/or market as a medical transport service if the entity possesses a valid medical transport license or certificate.
- These statutes should require brokers to disclose their role in arranging the transport and inform the client at the time the transport is arranged which licensed medical transport service will complete the transport, including providing the name, contact information, and licensure/certification information of that medical transport service.
- Active physician medical oversight and ongoing performance improvement through quality management must be a required component of medical transport service licensure/certification.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Meeting Conduct Policy

Originally approved June 2018

Background

The American College of Emergency Physicians (ACEP) is committed to providing a safe, productive and harassment-free environment at its Scientific Assemblies, educational meetings, conferences, and other ACEP-sponsored events. These events are designed to enable clinicians and researchers to convene for informational and educational sessions regarding the latest advances in treatment and care, and to promote learning, professional development, and networking opportunities. ACEP meetings also allow attendees to learn about and debate the latest scientific advances and to enjoy the company of professional colleagues in an environment of mutual respect. ACEP promotes equal opportunities and treatment for all participants. All participants are expected to treat others with respect and consideration, follow venue rules, and alert staff or security when they have knowledge of dangerous situations, violations of this Meeting Conduct Policy, or individuals in distress.

Prohibited Behavior

ACEP prohibits any form of harassment, sexual or otherwise, as set forth in its Non-Discrimination and Harassment Policy. Accordingly, some behaviors are specifically prohibited, whether directed at other attendees, ACEP staff, speakers, exhibitors, or event venue staff:

- Harassment or discrimination based on race, religion, gender, sexual orientation, gender identity, gender expression, disability, ethnicity, national origin, or other protected status.
- Sexual harassment or intimidation, including unwelcome sexual attention, stalking (physical or virtual), or unsolicited physical contact.
- Yelling at, threatening, or personally insulting speakers (verbally or physically).

Participants asked to stop engaging in hostile or harassing behavior are expected to comply immediately.

Application of Rules

These conduct rules apply to all attendees and participants at any ACEP-sponsored event, as well as ACEP-sponsored meeting social events (for example,

opening and closing parties at Scientific Assembly). **All who register to participate, attend, speak at, or exhibit at an ACEP event agree to comply with this Policy.**

Reporting Prohibited Behavior

Harassment or other violations of this Meeting Conduct Policy should be reported immediately to ACEP Meetings staff either in person, in writing by email at conduct@acep.org or other means of reporting. ACEP may involve event security and/or local law enforcement, as appropriate based on the specific circumstances. Event attendees and participants must also cooperate with any ACEP investigation into reports of a violation of this Meeting Conduct Policy by providing all relevant information requested by ACEP.

Potential Consequences

- ACEP reserves the right to remove any participant whose social attentions become unwelcome to another and who persists in such attentions after their unwelcome nature has been communicated.
- ACEP also reserves the right to remove any participant or attendee who appears inebriated and who engages in conduct that interferes with the ability of other attendees to participate in and enjoy the conference.
- ACEP may remove any individual from attendance or other participation in any ACEP-sponsored event, without prior warning or refund, if in its reasonable judgment, ACEP determines a violation of this Meeting Conduct Policy has occurred.
- If ACEP, in its reasonable judgment, determines that an individual has violated this Meeting Conduct Policy, ACEP may also prohibit the individual from attending or participating in future ACEP events.
- ACEP will also report on the outcome of any investigation to individuals who have reported a violation of this Meeting Conduct Policy.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Military Considerations in Emergency Medical Services (EMS)

Originally approved September 2018, replacing the following rescinded policy statements:

- Military Emergency Medical Services (1988-2018)
- Support for Transition of Military Medics into Civilian EMS Careers (2017-2018)

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled, "Military Considerations in Emergency Medical Services (EMS)"

The American College of Emergency Physicians (ACEP) recognizes that some members of the United States military may be trained and assigned in EMS-related roles and that all members of the military, their families, and/or visitors on military installations could require EMS care while within these non-warfare military-oriented geographic areas. ACEP supports the following related concepts:

- Military installation EMS systems must, at minimum, meet prevailing standards of clinical care existing within the surrounding geographic area, to include similar standards of education, credentialing, response times to potentially life-threatening situations and provisioning of medical equipment. Data-driven staffing standards are highly encouraged to promote optimal clinical outcomes while simultaneously achieving fiscal responsibilities.

- National certification requirements as well as local credentialing processes should be in place to assure military medics, corpsmen, and medical technicians are able to attain and maintain contemporary education standards.

- Military installation EMS systems should utilize a formal system of emergency medical dispatch, including enhanced 911, geospatial addressing per national standards, pre-arrival care instructions, dispatchers credentialed via physician medical director oversight, and emergency medical dispatch center accreditation by a relevant accreditation organization. Emergency medical dispatch center physician medical director oversight should include the ability to specify response configuration (ie. number and types of apparatus dispatched) and response modality (eg. lights/sirens or no lights/no sirens) based upon type and prioritization of medical condition information garnered through standardized caller interrogation.

- Military installation EMS system physician medical director oversight must be equivalent with qualities established by the ACEP policy statement on "The Role of the Physician Medical Director in EMS Leadership.

- Military installations should have EMS working groups involving, at minimum, Disaster & Emergency Services, Emergency Management, Installation Emergency Operations Center, and Installation Command. Communications by the EMS working group should align with the chain of command and be tested routinely. When EMS Medicine board-certified physicians are available, they should be integrally involved in EMS working groups. Military installation EMS working groups should address, at minimum, the following aspects of pre-hospital care: emergency care system organization, medical oversight including the role(s) of the physician medical director(s), operations policies, EMS facilities, communications, transportation, destinations of care, public education, continuous quality improvement, mass casualty/major incident/disaster planning and management (to include volunteer management and emergency credentialing), professional education, credentialing programs designed for initial and ongoing competency verification, and human resources.

- Military EMS systems should be fully integrated and participating in relevant local geographic area EMS system design, planning, and memorandums of understanding development.

- Retiring or end-of-service military members with EMS training and certifications should be afforded a timely, efficient transition method to equivalent civilian EMS certifications if they so desire. With continual needs for highly skilled and experienced clinicians in civilian EMS, utilization of willing former military EMS personnel helps to fulfill these needs.

- ACEP encourages collaboration within appropriate governmental agencies and EMS organizations to further develop efficient, effective military-to-civilian EMS certification, licensing, and credentialing.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Mitigating the Unintended Consequences of the CURES Act

Originally approved June 2022

While recognizing the value of improved patient access to medical records and the importance of reducing "information blocking," the American College of Emergency Physicians (ACEP) believes that direct communication and discussion of clinical results between the emergency department (ED) care team and the patient/patient representative prior to patient-level access to results is a best practice in emergency care. Any regulations that lessen an ED's ability to meet this practice may cause undue confusion and anxiety for patients and their advocate(s). Further, viewability of clinical results before they can be placed in context by the ED care team may increase the potential for avoidable reactionary events which may negatively impact the patient's health, threaten the wellness of the ED care team, contribute to a hostile working environment, or lead to workplace violence based on misinterpretation of clinical results.

Hospitals and EDs must collaborate to establish policies and procedures that support the in-person and contemporaneous presentation and discussion of results by an emergency physician or member of the ED care team to maximize patient knowledge and minimize the potential for patient or caregiver misinterpretation of externally released results. Additionally, robust advocacy is essential for a clear ED exception ("carve out") to the Cures Act that affords hospitals and EDs an efficient mechanism to be in place to delay release of these results for a minimum of 24 hours.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Motor Vehicle Safety

Revised June 2022,
June 2021, June 2015,
September 2008

Reaffirmed October 2001

Revised June 1997

Originally approved
April 1985

As an adjunct to this policy statement, ACEP has prepared a Policy Resource Education Paper (PREP) titled "Motor Vehicle Safety"

Traumatic injury to operators, passengers and bystanders from motor vehicle crashes is one of the most frequent causes of injury to patients treated by emergency physicians. The American College of Emergency Physicians (ACEP) recommends a multifaceted coordinated effort between private and commercial motor vehicle operators, recreation enthusiasts, vehicle manufacturers, federal/state/local agencies, and the medical community to improve motor vehicle safety and thereby reduce society's burden of disability, death, and costs related to motor vehicle trauma.

Emergency physicians must be knowledgeable about injury mechanisms and management of time-critical injuries of motor vehicle trauma. ACEP encourages its members to take the lead in motor vehicle safety activities at local, state, and national levels.

ACEP supports the development and implementation of programs, policies, legislation, regulations, and public education that will increase the safe use of all motorized vehicles including commercial, personal transportation and recreational vehicles (hoverboards, scooters, mopeds, lithium ion-based electronic bicycles and scooters, mini-bikes, all-terrain vehicles, [ATV], snowmobiles, boats, jet skis, go-karts, and other similar vehicles).

ACEP supports high-value motor vehicle safety activities and efforts to:

- Encourage public education about the dangers of impaired, intoxicated, and distracted driving.
- Adopt and enforce state legislation to prohibit alcohol-impaired driving, specifically mandating that: a blood alcohol concentration (BAC) of 0.08 g/dL is evidence of driving while impaired; a BAC of 0.05 g/dL is presumptive evidence of impaired driving; and any measurable level of BAC while driving shall be illegal in persons younger than the legal drinking age in each state.
- Adopt and enforce state legislation to prohibit driving while impaired by other intoxicating substances.
- Screen relevant patients for misuse of alcohol and other substances and offer referrals and treatment when indicated.
- Enforcement of existing speed limits and oppose further increases in speed limits.

- Adopt and enforce state legislation to prohibit driving while distracted by handheld electronic devices or other activities.
- Develop innovative technologies that detect driver impairment and reduce driver distraction from safely operating motor vehicles.
- Adopt and enforce primary safety-belt use laws and extend them to cover all seating positions in all motorized vehicles where feasible.
- Strengthen and enforce existing child safety seat laws and their use in appropriate locations within motor vehicles, consistent with current guideline recommendations (ie, rear-facing child seats until children are 2 to 4 years old, rear seat use until children are 14 years old).
- Adopt and enforce laws requiring all motorcyclists, bicyclists, and other wheeled recreational equipment users to wear appropriate helmets.
- Require vehicle manufacturers to adhere to rigorous safety standards.
- Support research and development to improve vehicle safety and prevent injury through innovative roadway and recreation area design.
- Promote the development, implementation, evaluation, and continuous improvement of advanced automatic crash notification and intelligent transportation technologies to optimize injured patient outcomes.
- Support and fund research understanding the mechanisms of motor vehicle crashes to improve management of patients and prevention strategies
- Continue support and funding of trauma research networks and research
- Advocate for federal and state level funding to have an innovative and technologically updated 911 response system in all urban or rural settings with seamless transfer of crash information between prehospital personnel and trauma centers.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2013

Motorized Recreational Vehicle and Watercraft Safety

Revised and approved by the ACEP Board of Directors titled, "Motorized Recreational Vehicle and Watercraft Safety" February 2013

Reaffirmed by the ACEP Board of Directors October 2006

Approved by the ACEP Board of Directors titled, "Motorized Recreational Vehicle/Craft* Safety" September 2000

Originated as Council Resolution CR029 titled, "All-Terrain Vehicles" in September 1986 and rescinded September 2000

The American College of Emergency Physicians (ACEP) supports the development and implementation of programs, policies, legislation, and regulations that will increase the safety of individuals using motorized recreational vehicles* and watercraft. These measures should emphasize the shared responsibility of owners, operators, passengers, and manufacturers to ensure the safety of riders and bystanders and must include the prohibition of children operators, the mandatory use of safety equipment and mandatory safety training and testing of all operators.

ACEP encourages a coordinated effort by recreation enthusiasts, manufacturers, federal and state agencies, and the medical community to reduce injury and death associated with the use of motorized recreational vehicles and watercraft. The manufacturer should specify vehicle and watercraft-specific required protective equipment, minimum driver training, and minimum height, weight and age requirements for operators.

*Motorized recreational vehicles and watercraft can include mopeds, mini-bikes, all-terrain vehicles (ATV), go-karts, snowmobiles, ultra-light aircraft, boats, jet skis, and other such vehicles.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Naloxone Access and Utilization for Suspected Opioid Overdoses

Revised February 2023

Revised June 2016

Originally approved October 2015

A joint policy statement of the American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the American College of Medical Toxicology (ACMT)

The American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the American College of Medical Toxicology (ACMT) continue their commitment to the emergency care of individuals with suspected opioid overdose and advocates for increased access to naloxone and education for its appropriate use by:

- Affirming naloxone is a life-saving therapy.
- Affirming naloxone is a generally safe and highly effective opioid antidote.
- Affirming the benefits of naloxone have been demonstrated in a wide variety of settings including administration by laypersons.
- Advocating for research, policies, laws, and regulations that support and prioritize the safe and effective care of patients with opioid overdose:
  - Policies and programs addressing opioid overdose should include:
    - Education on overdose recognition, naloxone administration, and post-administration care.
    - Persons at risk for opioid overdose, their friends/family, and first responders including emergency medical services (EMS) practitioners, law enforcement personnel, and firefighters.
- Endorsement of programs that increase access to naloxone. Examples of these include, but are not limited to:
  - Community naloxone distribution programs
  - Emergency department (ED) prescribing of naloxone
  - Direct dispensing by EDs
  - EMS leave behind programs

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

National Pandemic Readiness: Ethical Issues

Originally approved April 2021

The American College of Emergency Physicians (ACEP) believes that because pandemics may occur at any time, advance planning for these events is essential to protecting the public health. Therefore, ACEP recommends the following principles of pandemic preparedness:

1. Health care institutions should develop policies and protocols to ensure the availability of adequate pandemic resources, including hospital surge capacity, staffing, personal protective equipment, medications, and equipment.
2. Health care institutions should develop policies regarding allocation of scarce resources, which may include medications, ventilators, ICU beds, and other resources. Allocation decisions should be guided by policy and not be made in an ad hoc fashion at the bedside by treating physicians.
3. Emergency physicians should continue to serve their communities and nation during pandemics. Health care institutions, government, and other stakeholders should, in turn enable emergency physicians to protect themselves, their families, their co-workers, and their patients from undue risks in the provision of pandemic care. Those emergency physicians in personal health high-risk groups may receive due consideration for opting out of treating patients during a pandemic.
4. Emergency physicians should work with institutional and community leaders to use proven risk-communication methods to transparently communicate public health and safety information to staff, colleagues, and the public.
5. Claims of efficacy or testimonials should be avoided unless backed by appropriate scientific evidence. Those addressing the public should have requisite expertise.
6. Health care institutions should ensure availability of mental and behavioral health resources to health care workers.
7. Timely research on diagnostic and therapeutic measures is essential, and emergency physicians should participate in those research efforts.
8. To promote national pandemic readiness, ACEP will disseminate current, scientifically based information.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Neglect and Child Physical Abuse Presenting with Sentinel Injuries in Children Four Years and Younger in the Emergency Department

Originally approved October 2023

The American College of Emergency Physicians (ACEP) acknowledges the crucial role of healthcare professionals in identifying and treating child maltreatment. Infants and children presenting to the emergency department (ED) may exhibit subtle signs of neglect and physical abuse, requiring careful evaluation, coordination with specialists, and judicious reporting to child protection agencies.

- Child maltreatment has far-reaching consequences, including long-term health impacts and increased risks of chronic illnesses, mental health disorders, addiction, and shorter life expectancy.

- Neglect and child physical abuse are leading causes of death and disability in children. In 2019 alone, over three million reports of suspected child maltreatment were received in the United States, with approximately 656,000 confirmed victims. Young children, in particular infants and pre-verbal children, are highly vulnerable. Tragically, child abuse claims the lives of an estimated 1,840 children annually in the United States. Forty-five percent of all child fatalities were children under the age of one.

- Signs of neglect can include poor supervision, care, nourishment, or hygiene. Both neglect and sentinel injuries, or seemingly minor trauma, can serve as indicators for potential more serious injuries. A validated clinical decision rule to help screen children under four years of age with bruising to identify when a bruise is more likely to be caused by abuse than accidental injury, such as TEN-4-FACESp which stands for bruising to the Torso, Ears, Neck, Frenulum, Angle of the jaw, Cheeks, Eyelids or Subconjunctivae, “4” represents infants four months and younger with any bruise, anywhere, and “p” represents the presence of patterned bruising, aid in distinguishing abusive from non-abusive trauma based on the characteristics of bruising. Recognition of neglect and sentinel injuries provides an opportunity to intervene and prevent further harm.

- Previous studies highlight missed opportunities in identifying sentinel injuries. 1/3 to 1/2 of children who are severely injured or die due to physical abuse have been previously evaluated by healthcare professionals shortly prior to their deaths for seemingly minor visible injuries which were likely caused by abuse, but the diagnosis of abuse was not recognized. Recognizing signs of child abuse, such as sentinel injuries is essential for prompt evaluation of child abuse, regardless of social risk factors or protective factors.

- When a sentinel injury is identified, physicians should pursue further evaluation to assess additional injuries and underlying medical conditions. Guidelines from the American Academy of Pediatrics, American College of Surgeons, and American College of Radiology offer detailed approaches to evaluation for different clinical presentations.

- The use of electronic medical records (EMRs) can facilitate standardized care, guideline adherence, and improved outcomes. Strategies such as universal screening for child abuse, clinical decision support triggers, and child abuse-specific order sets can be implemented within the EMR system.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Nonbeneficial Emergency Medical Interventions

Revised February 2023 with current title, January 2017

Reaffirmed October 2008, October 2002

Originally approved March 1998 titled "Nonbeneficial ("Futile") Emergency Medical Interventions"

Emergency physicians may encounter situations, often near the end of life, but also during any patient encounter, in which a patient or surrogate requests or expects tests or treatments that, in the physician's judgment, have no realistic likelihood of providing benefit to the patient.

Regarding such treatments, the American College of Emergency Physicians (ACEP) believes:

- Emergency physicians are under no ethical obligation to render interventions that they judge to have no realistic likelihood of benefit to the patient.
- Emergency physicians' judgments not to start or to stop nonbeneficial interventions should be unbiased and should be based on available scientific evidence and societal and professional standards.
- Emergency physicians should recommend those interventions they believe to be the most appropriate under the circumstances. In cases of uncertainty or disagreement regarding the benefit of an intervention, temporizing interventions and admission are acceptable to allow additional time and resources to aid in decision-making. These resources may include written documents such as advance directives, patient and family communication, palliative care consultation, ethics consultation, social services, and spiritual guidance.
- Additional information that becomes available may require alteration of previous clinical decisions.
- When determining the utility of any emergency procedure, diagnostic test, medication, or other intervention, emergency physicians should remain sensitive to differences of opinion among physicians, patients, staff, and families regarding the value of such interventions.
- Emergency physicians caring for patients found in cardiac arrest who have no realistic likelihood of survival should consider not starting or continuing resuscitative efforts, both in the prehospital and hospital settings.
- When a decision is made to forgo interventions considered nonbeneficial, special efforts should be made to assure ongoing care and communication, including comfort, support, and counseling for the patient, family, and friends.
- Emergency physicians should advocate for institutional strategies to promote proactive patient and family communication, interdisciplinary review committees, and expert consultation regarding appropriate limits on requested medical tests and interventions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Non-Discrimination and Harassment

Revised April 2021, June 2018, April 2012 with current title

Originated as CR41 titled, "Non-Discrimination" and approved as a policy statement October 2005

The American College of Emergency Physicians (ACEP) acknowledges that implicit and explicit biases, attitudes, or stereotypes affect our understanding, actions, and decisions. These factors are further magnified in the emergency department where cognitive load, rapid and abbreviated interactions, and high stress can leave patients and staff vulnerable to pre-conceived notions and biases. In order to reduce biases and improve health equity, it is crucial to be mindful of their pervasiveness and to employ critical reflection, training, and education geared to address and disarm them. ACEP advocates for the respect and dignity of each individual, opposes all forms of discrimination and harassment, and supports anti-discrimination and anti-harassment practices protected by local, state, or federal law. Discrimination and harassment may be based on, but are not limited to, an individual's race, age, religion, creed, color, ancestry, citizenship, national or ethnic origin, language preference, immigration status, disability, medical condition, military, or veteran status, social or socioeconomic status or condition, sex, gender identity or expression, or sexual orientation.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2024

Observers in Emergency Medical Settings

Revised March 2024

Approved February 2018

Emergency physicians, hospital administrators, and managers often receive requests for outside individuals to be present and observe patient encounters in the emergency department or prehospital care settings. Observers may be members of the institution's health care team or enrolled in the institution's health care professional educational programs, such as those for medical, non-physician practitioner, paramedic, or other health practitioner students. As these programs are part of the institution's educational mission, such learners should usually be permitted access as observers.

Health care professionals and students from outside the institution may also request observer status. These often include medical students seeking residency training positions at the institution and international medical students seeking a U.S. medical experience. Other individuals seeking observer status may have commercial, business, educational, artistic, scientific, or other interests. This group often includes drug or equipment company representatives, actors, writers, or friends or children of physicians or other health care professionals.

Requests for outside observation should include careful consideration of the ethical concepts of privacy, confidentiality, autonomy, beneficence, non-maleficence, distributive justice, and truthfulness (honesty). Observers must adhere to all institutional policies.

ACEP believes:

- Institutions should have policies in place that address:
  - the definition of observers and its applicability;
  - the duration, scope, and purpose of observation;
  - the observer's, health care team's, and institution's responsibilities to each other;
  - the protection of patient confidentiality and privacy interests.
- Emergency physicians who administratively approve observerships should understand the ethical principles and professionalism issues involved and the relevant hospital policies, and have the authority to terminate any observership, if warranted.

- The hospital legal counsel, privacy officer, or other comparable administrative personnel should also approve the policies and processes for granting observerships.
- The institution's policy should be easily available to the public (potential patients), staff, and potential observers.

Non-discrimination

- Observerships should be offered under specific institutional guidelines that guarantee no individual applicant or observer will face discrimination. There should also be no discrimination as to who can be observed.

Observer education and limits

- Before beginning an observership, individuals should receive HIPAA training and education on institutional policies, particularly informed consent, confidentiality, privacy, and the permissible level of their involvement (if any) in clinical activities.

Consent

- When there is adequate justification for granting a person observer status, consent for the presence of observers must be sought and obtained from patients or, if incapacitated, their legally authorized representatives (LAR).
- Patients or their LAR should have the capacity to comprehend information and give consent prior to observation and not be under duress.
- Observation of resuscitation where consent is not possible may be permissible if allowed explicitly by institutional policy and with protections of patient confidentiality. This is ultimately under the purview of the governing structures and leadership of the institution.

Fees

- To avoid institutional or physician conflicts of interest, charges for observers generally should not be permitted. Although less desirable, institutions with extensive programs may charge a fee to cover *bona fide* costs, including those of administering the program, parking, or meals, but not for the supervision itself. Programs should not be designed to generate a profit.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Opposing the Use of the Term "Provider"

Originally approved October 2023

The American College of Emergency Physicians (ACEP) believes that, to ensure transparency and clarity for patients and families, health care professionals in the health care setting should be identified based on their specific health care professional training, specific skill sets, and abilities. ACEP strongly supports health care professionals being identified as physicians, nurse practitioners, or physician assistants respectively, and strongly opposes the use of the generic term "provider" or any other non-specific terminology.

In addition to physicians, nurse practitioners, and physician assistants, the emergency department care team is composed of many other clinical and non-clinical staff. ACEP recommends the use of the terminology "health care staff" or "health care workers" when referring to the entire team.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2019

Opposition to Copays for Medicaid Beneficiaries

Originally approved October 2019

The American College of Emergency Physicians (ACEP) opposes the imposition of copays for Medicaid beneficiaries seeking care in the emergency department.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Opposition to Routine Culturing of Skin and Soft Tissue Abscesses

Reaffirmed January 2024

Revised February 2018

Originated as CR18 and approved as a policy statement titled "Opposition to Routine Abscess Culturing" October 2012

The American College of Emergency Physicians (ACEP) opposes any recommendation and/or requirement that skin and soft tissue abscesses be cultured routinely.

Consider obtaining abscess cultures in selected patients, including patients with signs and symptoms of systemic illness, recurrent infection, or immunosuppression.

ACEP is supportive of notifying patients with positive cultures; however, ACEP opposes federal or state legislation and/or regulation that requires an attending physician to be the person who contacts and notifies patients of positive cultures.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved July 2022

Optimizing Pediatric Patient Safety in the Emergency Care Setting

Originally approved July 2022

As an adjunct to this policy statement, ACEP, AAP, and ENA have prepared a Policy Resource and Education Paper (PREP)/technical report titled "Optimizing Pediatric Patient Safety in the Emergency Care Setting"

A joint policy statement of the American College of Emergency Physicians, American Academy of Pediatrics, and Emergency Nurses Association

ABSTRACT. This is a revision of the previous American Academy of Pediatrics policy statement titled "Patient Safety in the Emergency Care Setting" and is the first joint policy statement by the American Academy of Pediatrics, the American College of Emergency Physicians, and the Emergency Nurses Association to address pediatric patient safety in the emergency care setting. Caring for children in the emergency setting can be prone to medical errors because of a number of environmental and human factors. The emergency department has frequent workflow interruptions, multiple care transitions, and barriers to effective communication. In addition, the high volume of patients, high decision density under time pressure, diagnostic uncertainty, and limited knowledge of patients' history and preexisting conditions make the safe care of critically ill and injured patients even more challenging. It is critical that all emergency departments, including general emergency departments who care for the majority of ill and injured children, understand the unique safety issues related to children. Furthermore, it is imperative that all emergency departments practice patient safety principles, support a culture of safety, and adopt best practices to improve safety for all children seeking emergency care. This policy statement outlines the recommendations necessary for emergency departments to minimize pediatric medical errors and to provide safe care for children of all ages.

ABBREVIATIONS: AAP, American Academy of Pediatrics; ACEP, American College of Emergency Physicians; AI, artificial intelligence; CDS, clinical decision support; CPOE, computerized physician order entry; ED, emergency department; EHR, electronic health record; ENA, Emergency Nurses Association, EMS, Emergency Medical Services.

POLICY STATEMENT

Over the last 2 decades, patient safety has become a key priority for health care systems because of increased recognition of the risks of medical care. Since the publication of the 2000 report of the Institute of Medicine (now the National Academies of Sciences, Engineering, and Medicine), "To Err is

Human: Building a Safer Health System,"[1] there have been significant increases in research, education, collaboration among numerous organizations, and development of outcome measures to promote safety in the medical care arena. Despite such progress, medical errors and patient harm remain common.[2,3]

Since the publication of the original American Academy of Pediatrics (AAP) policy statement on this topic,[4] several specific policies of the AAP, American College of Emergency Physicians (ACEP), and Emergency Nurses Association (ENA) related to patient safety strategies have been published in the peer-reviewed medical literature, including pediatric readiness in the emergency department (ED), handoffs, patient- and family-centered care, and medication safety.[5-8] In addition, the revised policy expands on the principles of pediatric patient safety in the AAP policy statement from the Council on Quality Improvement and Patient Safety[9] to address elements specific to caring for pediatric patients in the emergency care setting. Of note, the revised policy statement is also intended for promoting pediatric safety in all emergency care settings, including general EDs caring for children and pediatric EDs.

The Joint Commission constructed a framework that health care organizations can use to accelerate their progress toward the ultimate goal of zero harm. The framework is organized around 3 major domains of change including: 1) commitment of leadership to the goal of zero harm; 2) promotion of safety culture; and 3) empowerment of the work force to employ robust process improvements tools.[10] In addition, the Institute for Healthcare Improvement and Safe & Reliable Healthcare collaborated to develop the Framework for Safe, Reliable, and Effective Care. The framework consists of 2 foundational domains—culture and the learning system—along with 9 interrelated components, with engagement of patients and families at the core.[11] The 9 components include leadership, 4 cultural components (psychological safety, accountability, teamwork and communication, and negotiation) and 4 components of the learning system (transparency, reliability, improvement and measurement, and continuous learning). This policy statement will address adopting these frameworks of The Joint Commission as well as the Institute for Healthcare Improvement and Safe & Reliable Healthcare in the emergency care setting to provide resources and recommendations that promote pediatric patient safety.

RECOMMENDATIONS FOR OPTIMIZING PEDIATRIC PATIENT SAFETY IN THE EMERGENCY CARE SETTING

LEADERSHIP COMMITMENT TO SAFETY THROUGH ADOPTING PEDIATRIC READINESS

- Make patient safety in the ED a priority for hospital and ED leadership.
- Ensure that all EDs have the appropriate resources (medications, equipment, policies, and education) and capable staff to provide emergency care for children, per the AAP, ACEP, ENA joint policy on pediatric readiness in the emergency department.[5]
- Support the presence of a pediatric ED quality and patient safety committee or pediatric representative on the ED quality and safety committee, which increases the culture of safety and addresses pediatric specific safety issues.[12]
- Support the concepts and encourage acceptance of tenets of pediatric readiness in all EDs across communities at state and national levels.[5]
- Establish processes for ongoing quality improvement and regular assessment of pediatric readiness in the ED and develop a plan to address any deficiencies.

FACTORS INFLUENCING PATIENT SAFETY CULTURE IN THE ED

The main factors influencing patient safety culture in the ED are human, managerial, and organizational and environmental.[13-14]

I. Factors That Influence People and Their Behavior

Patient- and Family-Centered Care

- Acknowledge the family's role in the health of the patient as one of the core principles of patient- and family-centered care to ensure patient safety.[15]
- Engage patients and families at all points of emergency care, including family presence during procedures and resuscitation, cultural sensitivity, communication, shared decision-making, coordination with the medical home, and discharge planning and instructions.[7]
- Establish a clear policy and procedure for family presence, supported by all levels of the hospital staff including physician specialties, which will decrease family and staff anxiety when family is present during procedures and resuscitations[7, 16-17]
- Support attention to the physical, emotional, and distinct medical needs of children. Having designated areas in a general ED allows for taking steps toward making the physical environment safer for children, such as locks on cabinets, and placing dangerous equipment—ie, the sharps containers high and out of reach of children.
- Support patient- and family-centered care and safe care of all children, including children and youth with special health care needs such as children with intellectual disabilities, children who are nonverbal and have cerebral palsy, and children with deafness. This includes ensuring specific components of dignity and respect (such as listening to families), participation, collaboration, information and child-oriented resources, support for families, and environmental resources (eg, conducive and welcoming waiting room design and wait-time strategies). [18]
- Support the presence and expertise of a certified child life specialist in the ED that focuses on age-appropriate distraction techniques to minimize anxiety and fear and need for sedation in children undergoing procedures like intravenous line insertion, wound repair, and other invasive and painful procedures to positively affect the experience for the child and their caregiver and help improve safety and satisfaction with the ED visit.[19-21]. Training for nurses and physicians regarding distraction and pain-alleviating strategies is important especially in the absence of a child life specialists.
- Encourage timely communication between the ED and the medical home to ensure safe and continuum of care.
- Encourage seeking resources available at the Institute for Patient- and Family-Centered Care on the subject including a self-assessment inventory specific to the ED.[22]

Communication

- Cultural competency
  - Acknowledge the impact of racial and/or ethnic disparities on many aspects of emergency care, such as recognizing disparities in analgesic management for children presenting with acute abdominal pain, appendicitis, and fractures[23-25]; imaging[26]; and antibiotic prescriptions in viral infections.[27]
  - Advocate for efforts to target implicit bias training and diversify the ED workforce, which has the potential to close some of the gaps in heath disparities in the emergency care settings.[28-29]
  - Improve clinicians' cultural competency and awareness of their own implicit bias on the safety and quality of care of children in emergency care settings by providing education in health equity.[30] The fast pace and stressors in the ED environment may lead to cognitive shortcuts and greater use of stereotypes, which exacerbate implicit biases.[28]
- Language barriers
  - Identify language and cultural barriers in the emergency care setting, because they have a large impact on health care delivery and patient safety because of higher rates of medical errors and worse clinical outcomes.[31-32] Patients with language, culture, and socioeconomic challenges are disproportionately at risk of experiencing preventable adverse events in the health care system.[33-35]
  - Implement shared decision-making practices and address issues of ethnic culture, literacy, and language barriers by using trained language interpreter services rather than bilingual relatives or

limited clinician's proficiency in the patient's language.[36-37] Lack of such resources can increase the risk of adverse safety events, return visits to the ED, or deviation from evidence-based guidelines in emergency care setting.[38-41]

- Expand available resources for beside ED interpreters, such as using tele-interpreter services, which include sign language.[42]

Errors in Diagnosis in Pediatric Emergency Medicine

- Recognize that diagnostic errors or delayed diagnoses can occur throughout all settings of care including the ED. Such errors may cause harm to patients by preventing or delaying appropriate treatment, providing unnecessary or harmful treatment. [43]
- Identify factors that can cause breakdown in the diagnostic process. These include patient factors (language barriers, lower health literacy, and altered mentation), provider factors (overconfidence, cognitive biases, inadequate training, loss of skills/competencies, drug use), and systems factors (such as lack of available resources and poorly designed electronic health system). System factors also include socioeconomic factors (disparities attributable to insurance, race, language barriers, social determinants of health) that predispose patients to diagnostic errors.[43]
- Become aware of common cognitive biases in the clinician that can lead to diagnostic error.
- Systematically address diagnostic errors in the pediatric emergency care setting to provide high-quality and safe care.[44-48]

Shift Work/Burnout/Wellness

It has long been recognized that clinician factors, such as physician burnout, have a significant influence on the health care system in terms of productivity, care quality, and patient safety.[49-51] Burnout has led many physicians to consider reducing workload, retiring early, quitting, or even suicide.[52] Clinicians' mental health is also often affected by burnout.[50]

- Recognize clinician's burnout and poor well-being as factors contributing to poor safety outcomes such as incorrect medication orders, delayed care, and incorrect documentation, all of which contribute to diagnostic errors and patient harm.[51]
- Be aware of the potential impact of "off hour" shift work (evenings, nights, weekends, and holidays), changing shift assignment from day to night in the ED on premature burnout as well as poor overall physical, cognitive, mood and mental health.[53-56] All of these factors impact the potential to cause medical errors and risk to patient safety.[56,57]
- Consider using behavioral interventions such as light therapy, keeping a consistent shift, moderate caffeine consumption, and scheduled naps to minimize the short-term negative effects of a shifting sleep schedule. In addition, many of the risks of shift work are associated with metabolic syndrome and obesity. Therefore, encouraging all ED staff in keeping a healthy weight, exercising regularly, and adopting healthy eating habits might decrease such risks.
- Take into account improvement in clinicians' wellness when planning interventions to improve patient safety.[53] It is also critical to advocate for governments and health policy makers to invest in the wellness of health care professionals, especially nursing, to counter workforce shortage, which was exacerbated during the COVID-19 pandemic in hospitals and EDs, to ensure a healthy population.[58]

II. Managerial Factors

Psychological Safety and Reporting Close Calls

- Enhance patient safety by using reports from frontline staff of near misses and unsafe conditions to identify latent safety events. Such reporting is vital to continue to improve systems within the ED environment to ensure patient safety.[59]
- Encourage open communication and joint review and auditing (morbidity and mortality conferences or other mechanisms) of "near misses" among ED physicians and ED nursing staff. That practice can

help create "just culture" with no individual blame for errors, which can mitigate reluctance among clinicians to report and discourage the hiding of events.[60]

- Listen to families, as an underused source of data in emergency care settings, to learn about errors, especially preventable adverse events, many of which may not be otherwise recognized by the medical team or documented in the medical record or event reporting.[61]

ED Crowding and Patient Safety

- Recognize that ED crowding threatens pediatric patient safety and poses an increased risk of medical errors, including errors related to delays in providing emergent care.[62-68]
- Support sustainable solutions to ED crowding that decrease input by increasing primary care access through extended hours of the medical home.[69-70]
- Support ED throughput by implementing a 5-level triage system with nurse-initiated, evidence-based, standardized protocols and order sets at the point of initial triage consistent with the recommendations of the AAP policy statement on overcrowding.[71-73]
- Increase the use of clinical pathways, which could be included as part of the electronic health record (EHR) order set, in emergency care settings to decrease variation, increase efficiency, and improve safety for pediatric patients.[76-77]
- Improve the efficiency of care provided in emergency care settings to all acuity levels through the use of fast track and split flow on presentation.[73, 78-79]
- Develop innovative ED staffing models that adapt to growing patient needs [80] and introduce active bed management to facilitate timely ED to inpatient bed transfer and improve ED throughput.[81-82] Active bed management includes improvement of hospital inpatient discharge processes, such as timely room cleaning, streamlining the discharge process, and conducting early rounds to determine patients' eligibility for discharge. All of these practices can facilitate early transfer of patients from ED to the inpatient unit.
- Address nursing and staff shortage in the inpatient unit as well as in the ED, which can worsen during disasters such as during the COVID-19 pandemic. Such shortages can exacerbate the lack of available beds for admitted patients and also overburden nursing staff and create potential safety concerns.[83]
- Recognize that boarding, because of pediatric mental health issues, can worsen during disasters such as during the COVID-19 pandemic, where mental health illnesses increased in frequency and severity.[84] Disparities also exist in the outcomes of mental health; Black and Hispanic families are at risk for increased burden of grief because they experience higher mortality with certain illnesses such as with COVID-19, food insecurity, financial instability, and education interruption.[85-86]
- Recognize that boarding because of pediatric mental health issues which can worsen during disasters such as during the COVID-19 pandemic.[84] Disparities also exist in the outcomes of mental health; Black and Hispanic families are at risk for increased burden of grief because they experience higher mortality with certain illnesses such as with COVID-19, food insecurity, and financial instability and education interruption.[85-86]
- Advocate for increased mental health services in schools; integrate mental health into pediatric primary care; increase insurance coverage and payment for mental health in the ED as well as follow up care; and extend access to telehealth, all of which can decrease children and adolescents in crisis requiring ED visits. Advocacy for having appropriate mental health resources in the ED is critical for safety planning and post-discharge mental health outreach.
- Explore research, education, and collaboration to develop and implement sustainable solutions to prevent and manage ED crowding.

III. Organizational and Environmental Factors

Teamwork/Team Training

- Train ED staff in teamwork that teaches individuals to crosscheck each other's actions using easy to remember acronyms[87, 88] and mnemonics like those identified in the Children's Hospital's Solutions for Patient Safety-Zero Harm program to decrease the possibility of errors.[89]
- Optimize classroom education in teamwork by using simulation with specific scenarios to facilitate critical thinking skills, team interaction, and communication in the ED.[88] Multidisciplinary teams benefit from pre-event briefing, huddles, and post-event de-briefing to help identify opportunities for improvement. Simulation training is an effective tool to modify safety attitudes and teamwork behaviors in the ED setting. Sustaining cultural and behavioral changes requires repeated practice opportunities and accountability of the entire ED team to complete such training.[90]
- Support the integration of team training in the physician, nursing, and emergency medical services (EMS) training programs. The Agency for Healthcare Research and Quality provides information on several team-training programs with documented success in managing the challenging environment of the ED.[91]
- Incorporate a cultural broker (a go-between, one who advocates on behalf of another individual or group), when available, in the care team who can support the team to effectively address cultural differences in the patient's practices and subsequently promote health equity and safety.[92]

Emergency Department Shift Huddles

- Conduct shift huddles among all staff involved in the patient's care regularly in the ED to improve care coordination, relationships, and collaboration and strengthen the culture of safety.[93, 94] In addition, if time and circumstances allow, encourage less formal "spot" meetings at mid-shift to tackle any foreseeable concerns.
- Support safety huddles/safety briefings including daily check-ins. Huddles are recommended as a team building tool in Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS), which is an evidence-based teamwork system aimed at optimizing patient outcomes and safety to increase situational awareness and decrease error.[95]
- Support interprofessional and interdepartmental communication and collaboration between the ED and hospital units to improve patient flow from the ED to other units.[96]

Handoffs in the Emergency Department

Communication errors are a contributing factor for approximately two-thirds of sentinel events, [97] more than half of which involve handoff failures.[98]

- Recognize that patients requiring emergency care often transition across and within multiple care areas, including the prehospital setting, the ED, inpatient units, and medical homes. All of these transitions of care require handoffs to exchange mission-specific information, responsibility of care, and authority for treatment and procedures.[99] The joint policy statement from the AAP, ACEP, and ENA on handoffs reviewed many recommendations to improve the safety practice in the ED setting.[99]
- Recognize that miscommunication and misinformation that starts in the ED may affect a patient's inpatient and outpatient care as well, because such information can be perpetuated throughout the entire patient encounter (and future encounters). Handoffs are a well-documented safety risk in the ED attributable to communication errors, [99-103] cognitive biases,[103] and environmental factors.[99]
- Increase structured handoffs in the ED, which occur in less than 20% of handoffs from ED to inpatient care.[104] Numerous models have been implemented and studied to improve the quality of handoffs, including checklists[103-106] structured mnemonics,[105,107-108] and handoff bundles.[109,110] Examples of mnemonics include SBAR (**s**ituation, **b**ackground, **a**ssessment, and **r**ecommendation),[111] SOUND (**s**ynthesis, **o**bjective data, **u**pcoming tasks, **n**ursing input, and **d**ouble check),[105] ABC-SBAR (**a**irway, **b**reathing, **c**irculation followed by **s**ituation, **b**ackground, **a**ssessment, and **r**ecommendation),[109] and I-PASS (**i**llness severity, **p**atient summary, **a**ction list, **s**ituation awareness and contingency planning, and **s**ynthesis by receiver).[107]

- Develop novel and innovative physician staffing models to allow overlapping shifts to decrease the number of handoffs that occur. [112] Of note, the needs of each individual ED are unique. Therefore, the utilization and distribution of various staffing models utilizing physicians and other clinicians within the ED should be determined at the site level by local ED leadership.[113]
- Monitor patients in high-risk situations, in which key team members will visit such patients regularly to assess for change in clinical status. This situation includes handoff of a patient with an uncertain diagnosis or disposition, an unstable patient, a consultant-driven evaluation, a pending imaging study, deviations from a typical diagnosis or treatment plan, or a prolonged stay in the ED.[114]
- Explore further research comparing different handoff models in the ED setting to determine their effects on patient harm and clinical outcomes. In addition, best practices for handoffs need to be derived and validated so they can be implemented to improve patient safety in the emergency care setting.

EMPOWERMENT OF THE WORKFORCE TO EMPLOY ROBUST PROCESS IMPROVEMENTS AND SAFETY STRATEGIES

It is critical for patient safety to ensure that staff has the ability to do what is necessary for patients in a timely manner, keeping the best interest of the patient in mind, including adapting to technology and developing and implementing strategies for providing safe and quality medical care. Information from frontline clinicians is critical to continue to improve any system process or strategies taken to increase patient safety.

The Role of Information Technology in Patient Safety

- Recognize the important role of information technology in improving health care safety and quality. In the modern ED, EHR functionally integrates bed management, patient flow, medication ordering and administration, abnormal study results, documentation, changes in clinical status, and disposition planning.
- Increase the implementation of computerized physician order entry (CPOE) and clinical decision support (CDS) with electronic prescribing to reduce ordering medication errors. On the other hand, CPOE systems may not fully eliminate medication errors in children, because commercial or independently developed CPOE systems may fail to address critical unique pediatric dosing requirements.[115] In addition, because true dosing alerts for medication errors can be overridden by clinicians, system refinements are necessary to reduce the high false-positive alert rate, which could lead to alert fatigue.[116]
- Develop CDS tools and integrate them into EHR to streamline workflows. An example of a guideline embedded within information systems to increase adherence to best practices is the successful CDS implementation in EHR of the 2 Pediatric Emergency Care Applied Research Network (PECARN) prediction rules to identify children at very low risk of clinically important traumatic brain injury. As a result, head computed tomography (CT) utilization rates decreased from 26.8% to 18.9% with no increase in returns within 7 days and no significant missed diagnoses.[117]
- Identify technological solutions to medical safety concerns such as the use of electronic equipment (eg, programmable "smart" infusion pumps in neonates,[118] barcoding to compare identification bands with medications). Such solutions have resulted in improved detection of medication calculations and administration errors.[119]
- Leverage the use of telehealth to enhance patient safety by connecting patients and pediatricians to remote specialist care. Telehealth can help in preventing unnecessary transfers and keeping patients in rural areas connected to the health care system when in-person visits are difficult to achieve.[120-123]
- Recognize and support the evolving role of data science, and specifically artificial intelligence (AI) methods, in creating statistical models that can be integrated into CDS to improve patient safety and outcomes. In the ED, data science methods such as AI are increasingly being used for disease

identification, admission or discharge prediction, and patient triage.[124] AI is also being used to guide "smart" staffing decisions and resource allocation.[125]

Strategies for Improving Medication Safety in the Emergency Care Setting

- Use strategies for improving medication safety as outlined in the joint policy statement from the AAP, ACEP, and ENA on pediatric medication safety in the ED.[8] This includes the development of a standard pediatric formulary that includes standard concentrations and dosage of high-risk and frequently used medications, such as resuscitation medications, vasoactive infusions, narcotics, and antibiotics, as well as look-alike and sound-alike medications.[8]
- Establish a process to ensure that body weight is measured and recorded in kilograms only to avoid inappropriate calculations.[8, 126-127]
- Advocate for the integration of ED pharmacists, when possible, within the ED team to verify the preparation, dosing, dispensing, and reconciliation of medications administered in the ED as well as drug education to heath care team and patients.[128-130] Having pharmacists in the ED directly or in a consultative fashion remotely (telepharmacy) may increase medication safety in the emergency care setting.
- Establish the use of a distraction-free medication safety zone and implementation of an independent 2-clinicians check process[131] for high-alert medications, as suggested by the Institute for Safe Medication Practices and The Joint Commission.[131, 133] Patient-identification policies, consistent with The Joint Commission National Patient Safety Goals, should be implemented and monitored.[131, 133]
- Recognize risk factors for medication errors during ordering, preparation, and administration such as not using the appropriate weight and performing medication calculations based on pounds instead of the recognized standard of kilograms, inappropriate calculations including tenfold-dosing errors, and making medication errors in the 5 rights of medication (the right patient, the right medication, the right dose, the right time, and the right route).
- Establish safe sedation practices using guidelines such as the recently developed guidelines through a collaborative effort of the AAP and the American Academy of Pediatric Dentistry.[134]
- Advocate for policies to address timely tracking, reporting, and evaluation of patient safety events and for the disclosure of medication errors or unanticipated outcomes. Education and training in medication error disclosure should be available to care providers who are assigned this responsibility.[5, 135-136]

Pediatric Emergency Care Safety During Disasters Including Infectious Outbreaks

- Recognize that one of the fundamental foundations of pediatric disaster readiness is ensuring that general EDs are able to meet the needs of children on a daily basis. Thus, one of the key components of disaster preparedness for EDs is to be "pediatric ready."[5,126]
- Ensure disaster planning takes into consideration the unique needs of children, especially those with access and functional needs and preexisting and complex medical conditions, as well as recognition of physical, developmental, and psychosocial differences, because the majority of children present to community hospital EDs.[137]
- Review ED disaster plans to ensure the safety of unaccompanied children, because during disasters, children may present unaccompanied by caregivers and unable to self-identify,[138] and have an established protocols for patient tracking and family reunification.[138]
- Recognize that in a hazardous materials event, plans for decontamination of children should include attention to water temperature and pressure to reduce hypothermia and prevent further dermal injury.[139]
- Ensure that ED staff has practiced pediatric disaster plans either through simulations or including children in disaster drills given that disasters are "low frequency, high impact events."[140-142]
- Recognize that the mental health needs of children experiencing disasters can extend into adulthood.[143] Therefore, hospital ED pediatric disaster plans may include identifying personnel to attend to the psychosocial and psychological needs of children to immediately decrease mental stress/trauma.

- Ensure that staff and pediatric patients have adequate personal protective equipment to reduce transmission during infectious outbreaks.
- Use available resources to improve pediatric disaster preparedness and response. The Emergency Medical Services for Children Improvement and Innovation Center has excellent resources for disaster preparedness.[144] The AAP offers a resource kit and related tabletop exercises scenarios on a collaborative website as well as a chapter within the Topical Collection Part One on Pediatric Preparedness Exercises.[145,146] This kit was based on implementation of an AAP and Centers for Disease Control and Prevention virtual exercise.[147]

CONCLUSION

Patient safety remains a critical priority for all clinicians caring for children who are ill and injured as it is the foundation of high-quality health care. Clinicians must practice patient safety principles, support a culture of safety, and adopt best practices to continue to improve safety for all children seeking emergency care.

PREP/technical report available online at:
https://publications.aap.org/pediatrics/article/150/5/e2022059674/189658/Optimizing-Pediatric-Patient-Safety-in-the

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2017

Optimizing the Treatment of Acute Pain in the Emergency Department

Approved by the American Academy of Emergency Nurse Practitioners, the Emergency Nurses Association, and the Society of Emergency Medicine Physician Assistants August 2017

Approved April 2017

Replaces 2009 policy titled "Optimizing the Treatment of Pain in Patients with Acute Presentations" rescinded April 2017

A joint policy statement of the American College of Emergency Physicians, the American Academy of Emergency Nurse Practitioners, the Emergency Nurses Association, and the Society of Emergency Medicine Physician Assistants

The American College of Emergency Physicians seeks to improve acute pain management for patients in the emergency department (ED) and recognizes the need for prompt, safe, and effective pain management. **Although a very important topic, treatment of patients with chronic pain, especially those receiving hospice, palliative or end-of-life care, is beyond the scope of this document.**

Optimal acute pain management is patient-specific and pain syndrome-targeted when feasible, using a multimodal approach that includes pharmacological and non-pharmacological interventions. Base the assessment of pain and need for therapy on an overall accounting of patient status, including functional assessment, rather than solely on patient reported pain scores.

Acute Pain Management in the ED

Pharmacologic Treatments:

- Pharmacologic treatment of many acutely painful conditions should optimally begin with a non-opioid agent.

- Choose non-steroidal anti-inflammatory drugs (NSAIDs) based on their analgesic ceiling dose (which is lower than the anti-inflammatory maximal doses) and prescribe at the lowest effective dose for the shortest expected duration to avoid complications. Use NSAIDs with added caution in those with pre-existing renal insufficiency, heart failure, a predisposition to gastrointestinal hemorrhage, and in elderly patients.

- Oral (or rectal) acetaminophen is a good initial analgesic for mild-moderate pain. Intravenous acetaminophen (APAP) has similar effects as

oral, however is much more expensive, making it best reserved for those who cannot take medications by mouth or per rectum.[1]

- Regional anesthesia (nerve blocks), with or without ultrasound guidance, may be used for certain acutely painful conditions, either alone or as part of a multimodal approach to pain relief.

- Administration of sub-dissociative dose ketamine (SDK) may be used either alone or as part of a multimodal approach to pain relief for traumatic and non-traumatic pain. Emergency care providers should disclose to patients that SDK administration may trigger generally minor, transient side effects. Administration of sub-dissociative ketamine should commence under the same procedures and policies as other analgesic agents administered by the nursing staff in the ED setting.

- Intravenous lidocaine may be beneficial for specific, acutely painful conditions (e.g., renal colic, acute radicular back pain, herpetic/post-herpetic neuralgia) in patients without known structural heart disease or rhythm disturbances.

- Topical lidocaine patches may be used for certain pain syndromes, such as post-herpetic neuropathic pain and myofascial pain.

- Opioid analgesics are commonly used to manage acute severe pain in the ED as well as pain refractory to non-opioids. Before prescribing, assess risks of harm and counsel patients regarding serious adverse effects, such as sedation, respiratory depression, risk of tolerance and hyperalgesia, and potential risk of opioid use disorder. Risks of co-prescribing opioids with other CNS depressants, such as benzodiazepines, and the patient's individual risk of abuse should also be considered.

    - Patients can benefit from knowing opioid alternatives before receiving these agents, allowing shared analgesic planning.

    - In severe acute pain, titrate parenteral opioids in incremental doses based on response targeting comfort and function rather than complete pain relief.

    - As a general principle, those being prescribed opioids should only receive immediate-release opioids in the lowest effective dose for the shortest reasonably practical course.

    - Emergency care providers should generally not initiate therapy with extended-release (ER) (e.g., OxyContin, Opana ER, fentanyl patch) or long-acting (LA) opioids (eg, methadone).

    - Patients presenting to the ED for acute exacerbation of chronic pain should generally not receive an opioid analgesic or opioid prescription. When feasible, coordinate treatment with the patient’s primary pain management provider. Individualized treatment plans and contracts may be effectively used to guide treatment. If deemed necessary, the emergency care provider should only prescribe the minimal amount needed for a reasonable follow-up interval.

    - Prescription-monitoring programs allow emergency providers to identify and counsel patients with aberrant use patterns; this helps limit opioid abuse potential and identify those who may benefit from addiction treatment.[2]

    - Patients should also be counseled about safe medication storage and disposal.

Non-pharmacologic treatments:

- Given the adverse effects associated with many analgesics, it is particularly important to understand and employ non-pharmacologic treatments, including patient-centered communication techniques, physical interventions, ice/heat, topical coolant sprays, recommendations for activity and exercise, and relaxation techniques. Effective use of these modalities can improve care and lessen risk of harm from pharmacologic therapy.

- Empathic patient-centered communication is a core competency for emergency care providers. Patient-physician interactions characterized by empathy and trust are more likely to lead to optimal outcomes.[3]

- Mind-body therapies (MBT), alone or in combination with other modalities, have documented efficacy in the management of some types of pain; however, there is no evidence regarding their efficacy for ED patients.[4-6]

- There is a need for well-designed studies that examine the effect of behavioral therapy in the treatment of pain in ED patients.[7]

Appendix/Definitions:

Tolerance: "Tolerance is a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug's effects over time."[8]

Physical Dependence: Physical dependence is a state of adaptation that often includes tolerance and is manifested by a drug class specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist.[8]

Addiction: Addiction is a primary, chronic, neurobiological disease, with genetic, psychosocial, and environmental factors influencing its development and manifestations. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.[8]

"*Opioid-induced hyperalgesia*": "Opioid-induced hyperalgesia (OIH) is defined as a state of nociceptive sensitization caused by exposure to opioids. The condition is characterized by a paradoxical response whereby a patient receiving opioids for the treatment of pain could actually become more sensitive to certain painful stimuli."[9] OIH is difficult to differentiate from tolerance and cannot be reliably diagnosed in the ED.

Pain Classification:
Acute: Pain related to acute injury, harm or repair, and often shorter duration (typically less than 30 days). The cause may be known or unknown. Acute pain usually occurs as part of a single and treatable event. It is often (not always) associated with autonomic nervous system responses (tachycardia, hypertension, diaphoresis). Acute pain typically decreases with time.

Examples of diagnoses that are associated with acute pain include the following: long bone fractures, appendicitis, burns, and procedural pain.

Acute exacerbation of a recurring painful condition: Pain can occur over any duration of time. Pain is due to chronic organic nonmalignant pathology. Examples of diagnoses that include acute exacerbation of a

recurring painful condition are the following: sickle cell pain episodes and migraine headache. There are pain free episodes between the exacerbations.

Chronic/persistent pain: Chronic (persistent) pain is pain that lasts longer than the expected time of healing. There is continuous pain or the pain recurs at intervals for months or years. In some cases, there are acute exacerbations of chronic pain problems. The cause is often unknown. Examples of chronic/persistent pain include the following: low back pain, diabetic neuropathy, post herpetic neuralgia, multiple sclerosis, and phantom pain.

Cancer pain: Pain caused by "conditions that are potentially life-threatening." The causes of cancer pain are cancer itself, treatment of cancer, and concurrent disease. Examples of cancer pain include the following: cancer of the pancreas, spinal cord compression caused by tumor infiltration, postsurgical pain associated with cancer treatment, and post mastectomy syndrome.

References:

1. Sin B, Wai M, Tatunchak T, et al. The use of intravenous acetaminophen for acute pain in the emergency department. *Acad Emerg Med.* 2016;23(5):543-553.
2. Larochelle MR, Liebschutz JM, Zhang F, et al. Opioid prescribing after nonfatal overdose and association with repeated overdose: A cohort study. *Ann Intern Med*. 2016;164(1):1-9.
3. Kelm Z, Womer J, Walter JK, et al. Interventions to cultivate physician empathy: a systematic review. *BMC Med Educ*. 2014;14:219.
4. Penzien DB, Irby MB, Smitherman TA, et al. Well-established and empirically supported behavioral treatments for migraine. *Curr Pain Headache Rep*. 2015;19(7):34.
5. Theadom A, Cropley M, Smith HE, et al. Mind and body therapy for fibromyalgia. *Cochrane Database Syst Rev*. 2015;9(4).:CD001980.
6. Hoffman BM, Papas RK, Chatkoff DK, et al. Meta-analysis of psychological interventions for chronic low back pain. *Health Psychol*. 2007;26(1):1-9.
7. Lee C, Crawford C, Hickey A. Mind-body therapies for the self-management of chronic pain symptoms. *Pain Med*. 2014;15 Suppl 1:S21-39.
8. American Academy of Pain Medicine, the American Pain Society, the American Society of Addiction Medicine (2001). Definitions related to the use of opioids for the treatment of pain. *WMJ*. 2001;100(5):28-29.
9. Lee M, Silverman S, Hansen H, et al. A comprehensive review of opioid-induced hyperalgesia. *Pain Physician*. 2011 Mar-Apr;14(2):145-161.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Orders Received from Outside the Emergency Department

Revised January 2021,
June 2015 with current title

Reaffirmed October 2008

Revised February 2002,
January 1997

Originally approved
September 1992 titled
"Telephone Orders in the
Emergency Department"

Emergency physicians are available to provide care to patients in the emergency department (ED) 24 hours per day, 7 days per week, 365 days per year. The American College of Emergency Physicians (ACEP) believes that orders for ED patients that are received from a physician, nurse practitioner (NP), or physician assistant (PA) not physically present in the ED risk complicating or hindering patient care. Outside orders could create legal liability and restrict appropriate assessment and treatment in the ED.

Therefore, ACEP endorses the following principles:

- Hospital policy should specify the criteria for receiving telephone, electronic, or written orders from providers outside the ED.
- Orders regarding ED patients received from physicians, NPs, or PAs not physically present in the ED should be communicated to and coordinated with the treating emergency physician and may be modified by the emergency physician before implementation.
- If orders are placed for an ED patient by an outside physician, NP, or PA, it is the responsibility of the outside ordering physician, NP, or PA to follow up and act upon any results obtained from these orders.
- Patients sent to the ED by an outside physician, NP, or PA for the purpose of specific stated testing should be evaluated by a treating emergency physician with orders placed at the discretion of the treating physician.

The scope of this policy does not include hospital admitting orders given by a physician, NP, or PA outside the ED following completion of ED assessment and treatment. Transmittal of hospital admitting orders establishes the transfer of care from the emergency physician to the admitting physician. Such orders should be governed by applicable hospital policy and state law.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2016

Out-of-Hospital Medical Direction and the Intervener Physician

Approved January 2016

Revised April 2015 titled "Out-of-Hospital Medical Direction and the Intervener Physician" and rescinded October 2015

Revised April 2008 titled "Direction of Out-of-Hospital Care at the Scene of Medical Emergencies"

Reaffirmed October 2001, October 1997

Revised October 1993 titled "Direction of Prehospital Care at the Scene of Medical Emergencies"

Originally approved April 1984 titled "Control of Advanced Life Support at the Scene of Medical Emergencies"

The American College of Emergency Physicians (ACEP) believes that the direction of out-of-hospital care at the scene of a medical emergency should be the responsibility of the individual in attendance who is most appropriately trained and knowledgeable in providing out-of-hospital emergency care and transport. This is typically a certified EMS provider acting as part of the responding EMS agency.

During routine operations, the out-of-hospital provider is responsible for management of the patient and acts as an agent of the EMS medical director.

This document should guide but not usurp local protocols specifically addressing these issues. This position does not apply when the intervener is an EMS physician within the given EMS system.

Notwithstanding the special situations noted below, the out-of-hospital provider:

- shall act only within the provider's scope of practice.
- has a duty to re-establish medical direction with the on-line physician if the out-of-hospital provider believes that the emergency care rendered by the scene physician is inconsistent with standard of care.
- reverts to off-line medical direction (ie, existing EMS protocols) or on-line medical direction for the continued management of the patient
  - at any time when the scene physician is no longer in attendance.
  - if the treatment at the emergency scene differs from existing EMS protocols and is contradictory to quality patient care.

However, in some cases, a physician on scene may assume responsibility patient care and provide medical direction.

If the private physician is present (as may occur in a physician's office) and assumes responsibility for the patient's care:

The out-of-hospital provider should defer to the orders of the private physician. On-line medical direction, if that capability exists, should be contacted for record keeping purposes and possible collaboration with the treating physician.

*If an intervener physician is present and on-line medical direction is **not** available:*

The out-of-hospital provider at an emergency scene should relinquish responsibility for patient management when the intervener physician has:

1. been properly identified
2. agreed to assume responsibility
3. agreed to document the intervention in a manner acceptable to the local emergency medical services system (EMSS)
4. agreed to accompany the patient to the hospital, with the potential exception of a mass casualty incident or disaster.

When all of these conditions exist, the out-of-hospital provider should defer to the wishes of the physician on the scene. Despite the presence of this physician on scene, the out-of-hospital provider shall only act to the limit of their scope of practice.

*If an intervener physician is present and on-line medical direction **is** available:*

The on-line physician is ultimately responsible. It is the on-line physician's option to manage the case entirely, work with the intervener physician, or allow the intervener physician to assume responsibility. In the event:

1. of disagreement between the intervener physician and the on-line physician, the out-of-hospital provider should take orders from the on-line physician and place the intervener physician in contact with the on-line physician.
2. the intervener physician assumes responsibility, all orders to the out-of-hospital provider should be repeated over the radio for purposes of recording. The intervener physician should document the intervention in a manner acceptable to the local EMSS.
3. the out-of-hospital provider or on-line medical direction believes that the emergency care rendered by the intervener physician is inconsistent with EMS protocols and quality patient care, on-line medical direction should be reestablished. The decision of the intervener physician to accompany the patient to the hospital should be made in consultation with the on-line physician.

If a disaster or mass casualty situation exists:

An EMS physician shall provide medical oversight within the established command and control system.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Overcoming Barriers to Promotion of Women and Underrepresented in Medicine (URiM) Faculty in Academic Emergency Medicine

Originally approved October 2020

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) entitled, "Overcoming Barriers to Promotion of Women and Underrepresented in Medicine Faculty in Academic Emergency Medicine"

A joint policy statement of the American College of Emergency Physicians, American Academy of Emergency Medicine, Association of Academic Chairs of Emergency Medicine, and Society for Academic Emergency Medicine

The American College of Emergency Physicians (ACEP), American Academy of Emergency Medicine (AAEM), the Association of Academic Chairs of Emergency Medicine (AACEM), and the Society for Academic Emergency Medicine (SAEM) are committed to supporting women and underrepresented in medicine (URiM) faculty in advancing their careers and achieving academic promotion. Promotion not only celebrates individual achievement, but also affords faculty access to leadership roles limited to senior rank. By increasing diversity in healthcare leadership and governance, organizations can better address inequities that women and underrepresented minorities face, and improve healthcare delivery to patients with diverse values, beliefs, and behaviors. ACEP recommends the following strategies for academic departments and institutions to achieve organizational excellence with respect to the promotion and advancement of women and URiM faculty:

- Create a culture of inclusivity that hears, values, respects, and acts upon the ideas and experiences of a diverse workforce.
- Pair new faculty with a faculty advocate who can explain the value of promotion, the promotions process, and promotion criteria.
- Help women and URiM faculty build mentorship networks. Recognize and incentivize faculty who are successful mentors and sponsors of women and URiM faculty.
- Track and publicize recruitment and promotion metrics for women and URiM relative to their peers.
- Catalyze participation in research through mentorship, targeted developmental and funding opportunities. Sponsor women and URiM faculty as peer reviewers and editors.
- Ensure that Advancement Promotion and Tenure (APT) committees value the work of women and UriM on diversity committees and

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Overdose Prevention Centers

Originally approved October 2023

The American College of Emergency Physicians (ACEP) supports local, state, and federal efforts to legalize, fund, research, and evaluate overdose prevention centers (OPCs).

ACEP recognizes that substance use disorders are chronic medical conditions, but access to effective evidence-based treatments has been lacking. ACEP further recognizes that community organizations have historically addressed this healthcare gap through harm reduction, which uses practical strategies to respect individual choices while minimizing the negative consequences associated with drug use. ACEP appreciates that OPCs build upon this work and acknowledges the decades of research demonstrating their efficacy in reducing infectious disease transmission, improving service and treatment engagement, preserving community medical and financial resources, and, most importantly, saving lives. ACEP further recognizes that OPCs have not been fully evaluated on the individual and public health levels.

ACEP believes that OPCs should be authorized to operate as legally sanctioned healthcare facilities, have a sustainable structure for service reimbursement, and protect those who seek or provide care from municipal, state, and federal laws related to drug possession, paraphernalia, and maintaining drug-involved premises for their professional services.

ACEP supports further research that:

- Engages community stakeholders, including people who use drugs, in the design, implementation, and evaluation of OPCs;
- Uses harm reduction metrics, rather than focusing solely on abstinence, as evidence of successful interventions and policies;
- Evaluates best practices in responding to emerging trends in the overdose epidemic;
- Informs policymakers on the feasibility and effectiveness of OPCs to reduce harm and costs related to drug use; and
- Identifies the individual and public health effects of OPCs.

initiatives.

- Ensure that Advancement Promotion and Tenure (APT) committees value the work of women and URiM on diversity committees and initiatives.
- Strive for equity in recognition by having awards committees track their nominations of women and URiM faculty for departmental, institutional, and national awards.
- Call for balanced speaker panels at conferences.
- Champion policies that support women and URiM faculty (eg, reduction or elimination of overnight shifts in the 3rd trimester, protection against harassment and discrimination).
- Explore family-friendly processes (eg, emergency childcare services) that lighten the load of the "second shift," at home.
- Provide unconscious bias training for all physicians.
- Encourage a holistic review of candidates for promotion that considers the impact of variable opportunity and major life events (eg, medical, parental, or family leave) on productivity.
- Commit to diverse representation on search committees for both junior and senior leadership positions. Evaluate senior leaders on their success in developing diverse talent pipelines.
- Consider term limits for senior leadership roles such as dean and chair positions to allow new voices to be heard.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

June 2018

Patient Autonomy and Destination Factors in Emergency Medical Services (EMS) and EMS-Affiliated Mobile Integrated Healthcare/ Community Paramedicine Programs

Originally approved June 2018, replacing the following rescinded/sunsetted policy statements:

- Alternate Ambulance Transportation and Destination (2001-2018)
- Medical Direction of Mobile Integrated Healthcare and Community Paramedicine Programs (2014-2018)
- Refusal of Medical Aid (2000-2018)

The American College of Emergency Physicians (ACEP) believes that patients with medical decision making capacity (or legal guardians, health care agents or surrogates when applicable) should actively participate in treatment plans formulated by healthcare professionals utilizing standing order protocols and/or contemporaneous medical oversight in the provision of care by EMS systems and EMS-affiliated mobile integrated healthcare/community paramedicine (MIH/CP) programs, and supports the following principles:

- *Medical Decision-Making Capacity*: EMS systems and EMS-affiliated MIH/CP programs must utilize a formal process for establishing a patient's (or legal guardian's, health care agent's or surrogate's when applicable) medical decision-making capacity for dissent to medical assessment, treatment, and/or transportation. Key components in possessing medical decision-making capacity include the ability to understand the medical condition as presently assessed, the recommended further assessment, treatment, and/or transportation, and the alternatives, the benefits, and the refusal related risks of recommended further assessment, treatment, and/or transportation. Informed refusals, made with medical decision-making capacity, should be carefully documented in accordance with EMS and EMS-affiliated MIH/CP programs physician medical director established policies and involved patients/legal guardians/health care agents/surrogates should be provided reasonable health educational materials, including their right to future ability in accessing EMS (or EMS-affiliated MIH/CP programs when applicable).

  Adherence to EMS and EMS-affiliated MIH/CP programs physician medical director established policies relating to medical decision-making capacity assessment and informed refusals should be measured elements in the continuous quality improvement activities within EMS systems and EMS-affiliated MIH/CP programs.

- *Alternatives to Emergency Department Destination*: Emergency departments are the most typical destinations for patients cared for by EMS systems and frequent destinations for patients cared for by EMS-affiliated MIH/CP programs. Some patients with focused, differentiated healthcare needs, including those with established care providers willing to see them on an unscheduled, acute care basis, may potentially be safely and efficiently navigated to non-emergency department locations, utilizing local EMS and EMS-affiliated MIH/CP programs physician medical director established policies. These policies should substantively factor clinical necessity and continuity of care plans, particularly when advocating for patients with chronic illness in the complex infrastructure of health care delivery. Patients must be treated equitably in all treatment and destination considerations, avoiding discrimination by payor type, healthcare coverage/insurance status, or any social/demographic element.

  When considering alternatives to ambulance response, ambulance transportation and/or non-emergency department destinations, patient safety must always be the primary defining element. Destinations should be licensed with oversight by applicable authorities (state, federal, and/or tribal) and be staffed with qualified healthcare providers, also with oversight by applicable licensing authorities. The EMS and EMS-affiliated MIH/CP programs physician medical director must be integrally involved in the spectrum of such considerations, from dispatch center algorithms to on-scene patient assessment protocols to alternative transport mode and alternative destination criteria.

  ACEP's core beliefs include that patients utilizing a prudent layperson standard of a medical emergency should always have access to emergency care services, including accessing emergency care via 911 (or equivalent) public safety answering points. These patients wanting emergency department-based evaluation and management should not be precluded or unfairly dis-incentivized from those services by EMS systems, EMS-affiliated MIH/CP programs, or payers. EMS systems and EMS-affiliated MIH/CP programs should not be financially influenced and incentivized to specifically direct patients to lowest available levels of care. In other words, the patient clinical concerns and needs must predominate the services provided over any level of care-based remuneration potentials for EMS systems and/or EMS-affiliated MIH/CP programs.

  Patients utilizing a prudent layperson standard of a medical emergency accessing emergency care via 911 (or equivalent) public safety answering points with acute, unscheduled, and undifferentiated medical conditions should be transported to an emergency department with clinical capabilities consistent with emergency care needs. Similar patients, but with stable, differentiated medical conditions that may be suitable for transportation to a destination other than an emergency department (eg. mental health facility, sobering center, physician's clinical office) must be afforded at that alternative destination a medical screening exam (MSE) and stabilizing treatment by a qualified medical professional in accordance with the Emergency Medical Treatment and Active Labor Act (EMTALA).

  Adherence to EMS and EMS-affiliated MIH/CP programs physician medical director established policies relating to destination should be measured elements in the continuous quality improvement activities within EMS systems and EMS-affiliated MIH/CP programs.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Patient- and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department

Approved October 2020

Reaffirmed October 2020

Revised September 2018

Reaffirmed April 2012

Originally approved June 2006

ABSTRACT

Patient- and family-centered care (PFCC) is an approach to health care that recognizes the role of the family in providing medical care, encourages collaboration between the patient, family, and health care professionals; and honors individual and family strengths, cultures, traditions, and expertise. Although many opportunities exist for providing PFCC in the emergency department, several challenges are also present. The American College of Emergency Physicians supports the following: promoting patient dignity, comfort, and autonomy; recognizing the patient and family as key decision makers in the patient's medical care; recognizing the patient's experience and perspective in a culturally sensitive manner; acknowledging the interdependence of child and parent as well as the pediatric patient's evolving independence; encouraging family member presence; providing information to the family during interventions; encouraging collaboration with other health care professionals; acknowledging the importance of the patient's medical home; and encouraging institutional policies for PFCC.

Key words: patient and family-centered care, family-centered care, family member presence, cultural sensitivity, pediatric patient's medical home.

INTRODUCTION

Patient- and family-centered care (PFCC) is an approach to health care that recognizes the integral role of the family and encourages mutually beneficial collaboration among the patient, family, and health care professionals. PFCC ensures the health and well-being of children and their families through a respectful family-provider partnership. It honors the strengths, cultures, beliefs, values, traditions, and expertise that all members of this partnership bring to the relationship. PFCC is a practice that results in high-quality services.[1] PFCC embraces the concepts that 1) we are providing care for a person, not a condition; 2) the patient is best understood in the context of his or her family, culture, beliefs, values, and goals; and 3) honoring that context will result in better health care, safety, and patient experience.

BACKGROUND

Although many opportunities exist for providing PFCC in the emergency department (ED), significant challenges are also present in doing so.[2] Overcrowding and acuity in the ED may result in delay or disruption of care, challenging the ability of ED staff to provide care that is seen as respectful and sensitive to patient wishes. The lack of a prior relationship between patient/family and health care professionals and the stress of an emergency visit can also make it difficult to create an effective patient-provider partnership. The many cultural and societal variations in family structure among families can increase the difficulty in identifying a child's legal guardian(s). Situations unique to the ED, such as the arrival of a child by ambulance without family, the unaccompanied minor seeking care without the knowledge of family, visits related to abuse or violence, time-sensitive invasive procedures including resuscitation efforts, and the unanticipated death of a child can further affect delivery of effective PFCC and require thoughtful advanced planning.[3-5] The goal of PFCC is to allow for respect for the privacy of the patient and acknowledgment of the pediatric patient's evolving independence, especially with regard to reproductive issues.

Communication between health care professionals in the ED and the child's medical home or a community-based accessible primary care physician who offers coordinated, comprehensive, continuous, culturally effective care [6] will enhance support of PFCC in the ED. Furthermore, recognition of patient and family needs both within the ED and at home may include additional resources such as language and interpretation services, social services, and case management care coordination. Informed shared decision making among patients, family members/guardians, and providers should be a primary goal in providing caring, thoughtful, culturally sensitive care.

Family member presence during invasive procedures including resuscitation efforts has been recommended in a statement by the Ambulatory Pediatric Association,[2] which was endorsed by the American Academy of Pediatrics (AAP) in November 2004. [7,8] It is also well established that parent presence with less invasive procedures (IV placement, laceration repair, lumbar puncture, fracture reduction etc.) may actually improve the care provided. Studies have shown that most parents observe quietly from a distance and they rarely interfere with medical care. [9-11]

PFCC includes engaging the family to help prepare the child for minor procedures, either with the assistance of child-life specialists, or other ED providers with experience in this realm. Consistent preparation, positioning, and distraction, in conjunction with parental input, provide the foundation for enabling the child to best cope with minor procedures. In addition, addressing these issues can help significantly alleviate pain and anxiety, resulting in better care, as well as enhanced family and staff experience. [12]

The AAP and American College of Emergency Physicians have a long tradition of supporting PFCC and have issued independent and joint policy statements in the past.[13,14] This policy statement addresses the particular challenges in, and opportunities for, providing PFCC in the ED setting and is in concert with and as an adjunct to earlier statements.

RECOMMENDATIONS

The American College of Emergency Physicians supports the following:

1. Knowledge of the patient's experience and perspective is essential to practice culturally effective care that promotes patient dignity, comfort, and autonomy.
2. The patient and family are key decision makers regarding the patient's medical care.
3. The interdependence of child and parent, patient and family wishes for privacy, and the evolving independence of the pediatric patient should be respected.
4. The option of family member presence should be encouraged for all aspects of ED care.
5. Information should be provided to the family during interventions regardless of the family's decision to be present or not.

6. PFCC encourages collaboration with other health care professionals along the continuum of care and acknowledgment of the importance of the patient's medical home to the patient's continued well-being.
7. Institutional policies should be developed for provision of PFCC through environmental design, practice, and staffing in collaboration with patients and families.

An earlier version of this policy statement has been approved by the American College of Emergency Physicians Board of Directors and the American Academy of Pediatrics Board of Directors.[15]

REFERENCES

1. Emergency Nurses Association. Position Statement: Family Presence at the Bedside During Invasive Procedures and Cardiopulmonary Resuscitation. Des Plaines, IL: Emergency Nurses Association; 2005. Available at: www.ena.org. Accessed March 22, 2006.
2. Henderson DP, Knapp JF. Report of the National Consensus Conference on Family Presence During Pediatric Cardiopulmonary Resuscitation and Procedures. *Pediatr Emerg Care*. 2005;21:787-791.
3. Knazik S, Dietrich A, Gold C, et al. Death of a child in the emergency department. *Ann Emerg Med.* 2003 Oct;42(4):519-529.
4. Knapp J, Mulligan-Smith D, American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Death of a child in the emergency department. *Pediatrics.* 2005;115:1432-1437.
5. Emergency Nurses Association. Position Statement: End-of-Life Care in the Emergency Department. Des Plaines, IL: Emergency Nurses Association; 2005. Available at: www.ena.org. Accessed March 22, 2006.
6. American Academy of Pediatrics. Medical Home Initiatives for Children with Special Needs Project Advisory Committee. The medical home. *Pediatrics.* 2002 Jul;110(1 Pt 1):184-186.
7. McAlvin SS, Carew-Lyons A. Family presence during resuscitation and invasive procedures in pediatric critical care: a systematic review. *Am J Crit Care*. 2014 Nov;23(6):477-84.
8. Ferreira CA, Balbino FS, Balieiro MM, et al. Family presence during cardiopulmonary resuscitation and invasive procedures in children. *Revista Paulista de Pediatria.* 2014 Mar;32(1):107-113.
9. Dingeman RS, Mitchell EA, Meyer EC, et al. Parent presence during complex invasive procedures and cardiopulmonary resuscitation: a systematic review of the literature. *Pediatrics.* 2007 Oct;120(4):842-54.
10. Sacchetti A, Paston C, Carraccio C. Family members do not disrupt care when present during invasive procedures. *Acad Emerg Med*. 2005 May;12(5):477–479.
11. Young KD. Observational study of family member presence for pediatric emergency department procedures. *Pediatr Emerg Care*. 2014 Jul;30(7):449-52.
12. Dokken D, Parent K, Ahmann E. Family presence and participation: pediatrics leading the way... and still evolving. *Pediatr Nurs.* 2015 Jul-Aug;41(4):204-6.
13. Committee on Hospital Care. Family-centered care and the pediatrician's role. *Pediatrics.* 2003 Sep;112(3 Pt 1):691-697.
14. American College of Emergency Physicians. Cultural Awareness and Emergency Care. Policy Statement. *Ann Emerg Med*. November 2002.
15. American College of Emergency Physicians. Patient- and Family-Centered Care and the Role of the Emergency Physician Providing Care to a Child in the Emergency Department. *Ann Emerg Med.* 2006 Nov;48(5):643-5.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Patient Experience of Care Surveys

Revised February 2023,
June 2016 with current title

Originally approved
September 2010 titled
"Patient Satisfaction
Surveys"

The American College of Emergency Physicians (ACEP) recognizes that patient experience of care surveys that are methodologically and statistically sound can be reflective of the patient's perception of their health care experience, and that patient outcomes can be related to perceived patient experience of care.

However, neither institutions nor survey vendors have established widespread standardization of survey tools, populations, or methodologies. Inclusion and exclusion criteria have not been consistently applied, resulting in inconsistent survey results. Hospitals and survey vendors may sample or receive responses from a small percentage of the patients seen in the emergency department (ED) potentially leading to results with poor validity. Importantly, acutely ill or injured patients who are admitted to the hospital are typically excluded, the very patients to whom emergency physicians appropriately devote disproportionate amounts of time and attention. Moreover, factors leading to poor patient experience scores, including wait times, are often related to factors extrinsic to ED operations and outside of the control of the staff working in the ED.

Consumer Assessment of Healthcare Providers & Systems (CAHPS) was a program introduced by the Centers for Medicare & Medicaid Services (CMS) in in the mid-2000s as part of the overall shift of healthcare from a fee-for- service to a pay-for-performance model. The program was designed to assess the experiences of adult ED patients who were subsequently discharged home. An early version of a care quality survey for EDs, based on outpatient tools, was initially conceived as ED PEC (Patient Experience of Care); however, despite a prolonged trial of ED PEC and its offspring instrument, labeled ED CAHPS, CMS has still not validated nor issued standard ED surveys.

ACEP holds that patient experience of care survey tools should be:

- Standardized and validated for the average education level of those being surveyed.
- Administered and tabulated as close to the date of service as possible.
- Based on a statistically valid sample size free from selection bias.

- Administered to all categories of ED patients regardless of location seen or admission/discharge/ observation/transfer status to create a broad representation of patient experiences without marginalizing certain populations.
- Structured with methods to exclude patients who:
  - Leave without being seen/elope
  - Leave against medical advice
  - Require security intervention or restraint
  - Have altered mental status or lack capacity due to medical or psychiatry illness
  - Are held under involuntary behavioral health holds
  - Are evaluated in the custody of law enforcement
  - Have been surveyed within the last 30 days
  - Expired in the course of the ED/hospital stay
- Transparent in the administration and analysis methodologies.
- Explicit in the intended purpose and use.
- Designed to address clinically meaningful aspects of the patient's perception of care in the ED.

Due to the difficulty in refining whether patient experience of care scores are the result of physician performance or due to demands and restrictions on the current health care system, implicit bias, or other factors out of the control of the physician, patient experience of care metrics should not be used in isolation for purposes such as credentialing, contract renewal, or incentive bonus programs. Instead, they should be viewed as one data point among many when assessing perception of ED care.

Using patient experience of care scores for credentialing, contract renewal, or incentive bonus programs could have potential negative impacts on quality patient care including safe prescribing of controlled substances, use of antibiotics, and utilization of imaging. Patient experience surveys are best utilized in a collaborative fashion between physicians and healthcare organizations to assess the patient experience of care in the ED.

ACEP believes that:

- Patient experience scores whether attributed to an individual physician, other elements of the department, or the entire ED must be criterion-referenced. The standard to which it is compared must be previously determined and applicable to similar institutions in similar settings. The use of rank ordered percentiles must be abandoned, given irrelevant meaning of such comparative positioning.
- CMS should provide emergency physicians the opportunity to provide input into the ED CAHPS survey and methodology.
- Methodologies should be based on national standards.
- Patient experience of care measurement and methods to assess the validity of individual survey tools be incorporated into the training of residents in emergency medicine.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Patient Medical Records in the Emergency Department

Approved June 2022

Revised June 2022, January 2016, April 2009, February 2002 with current title

Originally approved January 1997 titled "Patient Records in the Emergency Department"

The American College of Emergency Physicians (ACEP) believes that high-quality emergency department (ED) medical records promote improved patient care. Many types of medical records are currently used including handwritten, dictated/transcribed, scribed, templated, and electronic medical records. Emergency physicians should play a lead role in the selection of all medical record documentation aspects for the health care system.

An effective ED medical record assists with:

- documentation of clinically relevant aspects of the patient encounter including laboratory, radiologic, and other testing results
- efficiency in the patient encounter continuum
- legibility
- communication with other health care professionals
- coordination of follow-up care
- identification of who entered data into the record
- discharge instruction communication
- ease of data collection and data reporting
- sharing and obtaining patient health information with and from outside care centers

When implemented successfully, a high-quality ED medical record should accurately capture the process of evaluation, management, medical decision making, and disposition related to a patient encounter. It should facilitate quality assessment, quality improvement, meaningful use, and risk management activities and not interfere with physician productivity. The ED medical record should be promptly available after the patient encounter. For EMR systems, technological assistance should be available immediately 24/7 and plans should be in place to manage records in the event of an EMR system failure.

Hospitals should provide a plan for appropriate and timely review of technology and software updates.

Hospitals should provide emergency physicians the same access to dictation and transcription services as is provided to other hospital medical staff.

ED medical records should be managed in compliance with applicable state and federal regulations, including the Health Insurance Portability and Accountability Act (HIPAA) of 1996.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Pedestrian Injury Prevention

Revised June 2022

Originally approved January 2016

The American College of Emergency Physicians (ACEP) believes that health care professionals providing acute care to adults and children injured in pedestrian accidents have a responsibility to promote programs that prevent and control pedestrian injuries. Pedestrian injuries are a worldwide problem, and there are many established best practices for prevention.

ACEP supports the following educational, engineering, and policy strategies to improve the walking environment and decrease pedestrian injuries.

- Public engagement, education, and outreach to promote a unified, coordinated approach to pedestrian safety.
- Working with government engineers to identify and redesign hazardous intersections as well as to reengineer pedestrian and traffic flow to enhance safety.
- Specific safety measures such as reduced speed limits, physical barriers to prevent contact between pedestrians and vehicles, and improved road lighting.
- Increased police enforcement of moving violations such as speeding, failure to yield to pedestrians, and texting while driving or walking. Public safety officials should provide redirection of traffic flow and barricades to keep vehicles away from large crowds during parades or other mass gatherings along roadways.
- Fully-integrated emergency medical services and trauma care systems to enhance survival and rehabilitation of injured pedestrians.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2023

Pediatric Medication Safety in the Emergency Department

Reaffirmed March 2023

Approved by the American Academy of Pediatrics and the Emergency Nurses Association October 2017

Originally approved October 2017

A joint policy statement of the American College of Emergency Physicians, the American Academy of Pediatrics, and the Emergency Nurses Association

Lee Benjamin, MD, FAAP, FACEP, Karen Frush, MD, FAAP, Kathy Shaw, MD, MSCE, FAAP, Joan E. Shook, MD, MBA, FAAP, Sally K. Snow, BSN, RN, CPEN, FAEN

AMERICAN ACADEMY OF PEDIATRICS
Committee on Pediatric Emergency Medicine

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
Pediatric Emergency Medicine Committee

EMERGENCY NURSES ASSOCIATION
Pediatric Emergency Medicine Committee

POLICY STATEMENT
Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

ABSTRACT. Pediatric patients cared for in emergency departments are at high risk of medication errors for a variety of reasons. A multidisciplinary panel was convened by the Emergency Medical Services for Children program and the American Academy of Pediatrics Committee on Pediatric Emergency Medicine to initiate a discussion on medication safety in the emergency department. Top opportunities identified to improve medication safety include using kilogram-only weight-based dosing, optimizing computerized physician order entry using clinical decision support, developing a standard formulary for pediatric patients while limiting variability of medication concentrations, using pharmacist support within emergency departments, enhancing training of medical professionals, systematizing the dispensing and administration of medications within the emergency department, and addressing challenges for home medication administration before discharge.

ABBREVIATION: ADE, adverse drug event; ASHP, American Society of Health-System Pharmacists; CPOE, computerized physician order entry; ED, emergency department.

BACKGROUND

Despite a national focus on patient safety since the publication of the Institute of Medicine report "To Err is Human" in 1999, medical errors remain a leading cause of morbidity and mortality across the United States.[1] Medication errors are by far the most common type of medical error occurring in hospitalized patients,[2] and the medication error rate in pediatric patients has been found to be as much as 3 times the rate in adult patients.[3,4] Because many medication errors and adverse drug events (ADEs) are preventable,[1] strategies to improve medication safety are an essential component of an overall approach to providing quality care to children.

The pediatric emergency care setting is recognized as a high-risk environment for medication errors because of a number of factors, including medically complex patients with multiple medications who are unknown to emergency department staff, a lack of standard pediatric drug dosing and formulations,[5] weight-based dosing,[6,7] verbal orders, a hectic environment with frequent interruptions,[8] lack of clinical pharmacists on the emergency department (ED) care team,[9,10] inpatient boarding status,[11] use of information technology systems that lack pediatric safety features,[12] and numerous transitions in care. In addition, the vast majority of pediatric patients seeking care in EDs are not seen in pediatric hospitals but rather in community hospitals, which may treat a low number of pediatric patients.[13] Studies also outline the problem of medication errors in children in the prehospital setting. A study of 8 Michigan emergency medical services agencies demonstrated errors for commonly used medications, with up to one third of medications being dosed incorrectly.[14] Medication error rates reported from single institutions with dedicated pediatric EDs range from 10% to 31%,[15,16] and a study by Shaw and colleagues from a pediatric tertiary care center network showed that medication errors accounted for almost 20% of all incident reports, with 13% of the medication errors causing patient harm.[17] Another study examined medication errors in children at 4 rural EDs in northern California and found an error rate of 39%, with 16% of these errors having the potential to cause harm.[18] The following discussion adds to the broad topic of medication safety by introducing specific opportunities unique to pediatric patients within EDs to facilitate local intervention on the basis of institutional experience and resources.

STRATEGIES FOR IMPROVEMENT

A multidisciplinary expert panel was convened by the Emergency Medical Services for Children program and the American Academy of Pediatrics, through its Committee on Pediatric Emergency Medicine, to discuss challenges related to pediatric medication safety in the emergency setting. The panel included emergency care providers, nurses, pharmacists, electronic health record industry representatives, patient safety organization leaders, hospital accreditation organizations, and parents of children who suffered ADEs. The panel outlined numerous opportunities for improvement, including raising awareness of risks for emergency care providers, trainees, children, and their families; developing policies and processes that support improved pediatric medication safety; and implementing best practices to reduce pediatric ADEs. Specific strategies discussed by the panel, as well as recent advances in improving pediatric medication safety, are described.

Decreasing Pediatric Medication Prescribing Errors in the ED

Computerized Physician Order Entry

Historically, the majority of pediatric medication errors were associated with the ordering phase of the medication process. Specific risks related to pediatric weight-based dosing include not using the appropriate weight,[17] performing medication calculations based on pounds instead of the recognized standard of kilograms,[17] and making inappropriate calculations, including tenfold dosing errors.[19,20,21] Childhood obesity introduces further opportunity for dosing error. In addition to the lack of science to guide medication dosing in obese patients [22], frequent underdosing[23] is reported, and currently available resuscitation tools are

commonly imprecise.[24] Furthermore, there are limited opportunities for prescription monitoring or double-checking in the ED setting, and many times calculations are performed in the clinical area without input from a pharmacist.[9] The implementation of computerized physician order entry (CPOE) and clinical decision support (CDS) with electronic prescribing have reduced many of these errors, because most CPOE systems obviate the need for simple dose calculation. However, CPOE systems have not fully eliminated medication errors. Commercial or independently developed CPOE systems may fail to address critical unique pediatric dosing requirements.[12,25] Kilogram-only scales are recommended for obtaining weights, yet conversion to pounds either by the operator or electronic health record may introduce opportunity for error into the system. In addition, providers may override CDS, despite its proven success in reducing errors.[16,26] Prescribers frequently choose to ignore or override CDS prescribing alerts, with reported override rates as high as 96%.[27] Allowing for free text justification to override alerts for nonformulary drugs may introduce errors. The development of an override algorithm can help reduce user variability.[28] As the use of CPOE increases, one can expect that millions of medication errors will be prevented.[29] For EDs that do not use CPOE, preprinted medication order forms have been shown to significantly reduce medication errors in a variety of settings and serve as a low-cost substitute for CPOE.[30,31,32,33]

Standardized Formulary

The IOM recommends development of medication dosage guidelines, formulations, labeling, and administration techniques for the pediatric emergency care setting.[5] Unfortunately, there are currently no universally accepted, pediatric-specific standards with regard to dose suggestion and limits, and dosing guidelines and alerts found in CPOE are commonly provided by third-party vendors that supply platforms to both children's and general hospitals. The development of a standard pediatric formulary, independent from an adult-focused system, can reduce opportunities for error by specifying limited concentrations and standard dosage of high-risk and frequently used medications, such as resuscitation medications, vasoactive infusions, narcotics, and antibiotics as well as look-alike and sound-alike medications.[34] A standard formulary will allow for consistent education during initial training and continuing medical education for emergency care providers, creating a consistent measure of provider competency. At least one large hospital organization has successfully implemented this type of change.[35] In addition, the American Society of Health-System Pharmacists (ASHP) is working with the Food and Drug Administration to develop and implement national standardized concentrations for both intravenous and oral liquid medications.[36]

ED Pharmacists

Currently, many medications are prepared and dispensed in the ED without pharmacist verification or preparation, because many EDs lack consistent on-site pharmacist coverage.[9,37] In a survey of pharmacists, 68% reported at least 8 hours of ED coverage on weekdays, but fewer than half of EDs see this support on weekends, with a drastic reduction in coverage during overnight and morning hours.[38] The American College of Emergency Physicians supports the integration of pharmacists within the ED team, specifically recognizing the pediatric population as a high-risk group that may benefit from pharmacist presence.[39] The Emergency Nurses Association supports the role of the emergency nurse as well as pharmacy staff to efficiently complete the best possible medication history and reduce medication discrepencies.[40,41] The ASHP suggests that ED pharmacists may help verify and prepare high-risk medications, be available to prepare and double-check dosing of medications during resuscitation, and provide valuable input in medication reconciliation, especially of medically complex children whose medications and dosing may be unknown to ED staff and who present without a medication list or portable emergency information form (EIF).[42] Medically complex patients typify the difficulty with medication reconciliation with an error rate of 21% in a tertiary care facility.[43] In this study, no one source of either the parent, pharmacy, or primary provider was available, appropriately sensitive or specific in completing medication reconciliation. Pharmacist managed reconciliation has had a positive impact for admitted pediatric patients and may translate to the emergency setting.[44,45] ED pharmacists can also help monitor for ADEs, provide drug information, and provide information regarding medication ingestions to both providers and patients/families.[46]

Dedicated pharmacists can be integrated through various methods, such as hiring dedicated pharmacy staff for the ED,[7] having these staff immediately available when consulted, or having remote telepharmacy review of medication orders by a central pharmacist.[47,48] Although further research is needed on the potential outcomes on medication safety and return on investment when a pharmacist is placed in the ED, current experience indicates improvements in medication safety when a pharmacist is present.[49] Studies from general EDs suggest significant cost savings as well,[50] with one study in a single urban adult ED identifying more than $1 million dollars of cost avoidance in only 4 months.[51]

Training in Pediatric Medication Safety

Dedicated training in pediatric medication safety is highly variable in curricula of professional training programs in medical, nursing, and pharmacy schools.[52] Although national guidelines support the training of prehospital personnel with specific pediatric content and safety and error-reduction training,[53] a nearly 35% prehospital medication error rate for critical medications for pediatric patients remains.[14] At the graduate medical education level, the curricula of pediatric and emergency medicine residency programs and pediatric emergency medicine fellowship programs do not define specific requirements for pediatric medication safety training.[54,55,56] The same is true for pharmacy programs.[57] Although schools of pharmacy include pediatric topics in their core curricula, pediatric safety advocates believe there is an opportunity for enhanced and improved training.[58]

Experts in pediatric emergency care from the multidisciplinary panel recommend development of a curriculum on pediatric medication safety that could be offered to all caregivers of children in emergency settings. A standard curriculum may include content such as common medication errors in children, systems-improvement tools to avoid or abate errors, and the effects of developmental differences in pediatric patients. Demonstrating competency on the basis of this curriculum is one means by which institutions may reduce risks of medication errors.

Decreasing Pediatric Medication Administration Errors in the ED

The dispensing and administration phases serve as final opportunities to optimize medication safety. Strategies to reduce errors include standardizing the concentrations available for a given drug, having readily available and up-to-date medication reference materials, using premixed intravenous preparations when possible, having automated dispensing cabinets with appropriate pediatric dosage formulations, using barcoded medication administration,[59] pharmacists and ED care providers working effectively as a team, and having policies to guide medication use.[60,61] Although yet to be studied in the ED environment, smart infusion pumps have shown promise in other arenas in reducing administration errors for infusions.[62]

Nurses are held accountable by each state's nurse practice act for the appropriateness of all medications given. Nursing schools teach the 5 rights of medication administration; the right patient, the right medication, the right dose, the right time, and the right route.[63] Elliott and Liu expand the 5 rights to include right documentation, right action, right form, and right response to further improve medication safety.[64] Simulated medication administration addresses opportunities beyond those captured within these rights and may have implications within the ED.[65] Additionally, given the association of medication preparation interruptions and administration errors,[66] the use of a distraction-free medication safety zone has been shown to enhance medication safety.[67,68] Implementation of an independent 2-provider check process for high-alert medications, as suggested by The Joint Commission, also reduces administration errors.[69] Both the Institute for Safe Medication Practices and The Joint Commission provide excellent guidance on these topics.[70]

Decreasing Pediatric Medication Errors in the Home

Recognizing and addressing language barriers and health literacy variability in the ED can affect medication safety in the home. Nonstandardized delivery devices continue to be used in the home, and dosing error rates of greater than 40% are reported.[71] Advanced counseling and instrument provision in the ED are proven to

decrease dosing errors at home.[72] Pictograms provided to aide in medication measurement have also been shown to decrease errors and may be considered as part of discharge instructions.[73] The AAP supports policy on the use of milliliter-only dosing for liquid medications used in the home and that standardized delivery devices be distributed from the ED for use with these medications.[74] As the body of literature regarding health literacy evolves, further addressing these issues in real time may influence out-of-hospital care.

SUMMARY

Pediatric medication safety requires a multidisciplinary approach across the continuum of emergency care, starting in the prehospital setting, during emergency care, and beyond. Key areas for medication safety specific to pediatric care in the ED include creation of standardized medication dosing guidelines, better integration and use of information technology to support patient safety, and increased education standards across health care disciplines. Following is a list of specific recommendations that can lead to improved pediatric medication safety in the emergency care setting.

RECOMMENDATIONS

1. Create a standard formulary for pediatric high-risk and commonly used medications.
2. Standardize concentrations of high-risk medications.
3. Reduce the number of available concentrations to the smallest possible number.
4. Provide recommended precalculated doses.
5. Measure and record weight in kilograms only.
6. Utilize length-based dosing tools when a scale is unavailable or use is not feasible.
7. Implement and support the availability of pharmacists in the ED.
8. Use standardized order sets with embedded best practice prescribing and dosing range maximums.
9. Promote the development of distraction free medication safety zones for medication preparation.
10. Implement process screening, such as a 2-provider independent check for high-alert medications.
11. Implement and utilize CPOE and CDS with pediatric-specific kilogram-only dosing rules, including upper dosing limits within Emergency Department Information Systems.
12. Encourage community providers of children with medical complexity to maintain a current medication list and an emergency information form to be available for emergency care.
13. Create and integrate a dedicated pediatric medication safety curriculum into training programs for nurses, physicians, respiratory therapists, nurse practitioners, physician assistants, prehospital providers, and pharmacists.
14. Develop tools for competency assessment.
15. Use dispensing standardized delivery devices for home administration of liquid medications.
16. Dispense milliliter-only dosing for liquid medications used in the home.
17. Employ advanced counselling such as teach-back when sharing medication instructions for home use.
18. Use pictogram-based dosing instruction sheets for use of home medications.

The guidance in this statement does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.
All policy statements from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

FUNDING: *No external funding.*

FINANCIAL DISCLOSURE: *The authors have indicated they do not have a financial relationship relevant to this article to disclose.*

POTENTIAL CONFLICT OF INTEREST: *The authors have indicated they have no potential conflicts of interest to disclose.*

AUTHORS
Lee Benjamin, MD, FAAP, FACEP
Karen Frush, MD, FAAP
Kathy Shaw, MD, MSCE, FAAP
Joan E. Shook, MD, MBA, FAAP
Sally K. Snow, BSN, RN, CPEN, FAEN

AAP COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 2017-2018
Joseph Wright, MD, MPH,FAAP, Chairperson
Terry Adirim, MD, MPH, FAAP
Michael S.D. Agus, MD, FAAP
James Callahan, MD, FAAP
Toni Gross, MD, MPH, FAAP
Natalie Lane, MD, FAAP
Lois Lee, MD, MPH, FAAP
Suzan Mazor, MD, FAAP
Prashant Mahajan, MD, MPH, MBA, FAAP
Nathan Timm, MD

LIAISONS
Andrew Eisenberg, MD, MD – American Academy of Family Physicians
Cynthia Wright Johnson, MSN, RN – National Association of State EMS Officials
Cynthiana Lightfoot – AAP Family Partnerships Network
Charles Macias, MD, MPH – EMSC Innovation and Improvement Center
Brian Moore, MD, MPH, FAAP – National Association of EMS Physicians
Diane Pilkey, RN, MPH – Maternal and Child Health Bureau
Katherine Remick, MD, FAAP – National Association of Emergency Medical Technicians
Mohsen Saidinejad, MD, MBA, FAAP, FACEP – American College of Emergency Physicians
Sally Snow, RN, BSN, CPEN, FAEN – Emergency Nurses Association
David Tuggle, MD, FAAP – American College of Surgeons

FORMER AAP COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE MEMBERS, 2012-2016
Alice Ackerman, MD, MBA
Thomas Chun, MD, MPH, FAAP
Gregory Conners, MD, MPH, MBA, FAAP
Edward Conway, Jr, MD, MS, FAAP

Nanette Dudley, MD, FAAP
Joel Fein, MD
Susan Fuchs, MD, FAAP
Marc Gorelick, MD, MSCE
Natalie Lane, MD, FAAP
Charles Macias, MD, MPH, FAAP
Brian Moore, MD, FAAP
Steven Selbst, MD
Kathy Shaw, MD, MSCE, Chair (2008-2012)
Joan Shook, MD, MBA, FAAP, Chair (2012-2016)
Joseph Wright, MD, MPH, FAAP

STAFF
Sue Tellez
Tamar Margarik Haro

ACEP PEDIATRIC EMERGENCY MEDICINE COMMITTEE, 2016-2017
Madeline Joseph, MD, FACEP, Chair
Kiyetta Alade, MD
Christopher Amato, MD, FACEP
Jahn T. Avarello, MD, FACEP
Steven Baldwin, MD
Isabel A. Barata, MD, FACEP, FAAP
Lee S. Benjamin, MD, FACEP
Kathleen Berg, MD
Kathleen Brown, MD, FACEP
Jeffrey Bullard-Berent, MD, FACEP
Ann Marie Dietrich, MD, FACEP
Phillip Friesen, DO
Michael Gerardi, MD, FACEP, FAAP
Alan Heins, MD, FACEP
Doug K. Holtzman, MD, FACEP
Jeffrey Homme, MD, FACEP
Timothy Horeczko, MD, MSCR
Paul Ishimine, MD, FACEP
Samuel Lam, MD, RDMS
Katharine Long
Kurtis Mayz, JD, MD, MBA
Sanjay Mehta, MD, Med, FACEP
Larry Mellick, MD
Aderonke Ojo, MD, MBBS
Audrey Z. Paul, MD, PhD
Denis R. Pauze, MD, FACEP
Nadia M. Pearson, DO
Debra Perina, MD, FACEP
Emory Petrack, MD
David Rayburn, MD, MPH
Emily Rose, MD
W. Scott Russell, MD, FACEP
Timothy Ruttan, MD, FACEP

Mohsen Saidinejad, MD, MBA, FACEP
Brian Sanders, MD
Joelle Simpson, MD, MPH
Patrick Solari, MD
Michael Stoner, MD
Jonathan H. Valente, MD, FACEP
Jessica Wall, MD
Dina Wallin, MD
Muhammad Waseem, MD, MS, FACEP
Paula J. Whiteman, MD, FACEP
Dale Woolridge, MD, PhD, FACEP

FORMER ACEP PEDIATRIC EMERGENCY MEDICINE COMMITTEE MEMBERS, 2012-2016
Joseph Arms, MD
Richard M. Cantor, MD, FACEP
Ariel Cohen, MD
Carrie DeMoor, MD
James M. Dy, MD
Paul J. Eakin, MD
Sean Fox, MD
Marianne Gausche-Hill, MD, FACEP, FAAP
Timothy Givens, MD
Charles J. Graham, MD, FACEP
Robert J. Hoffman, MD, FACEP
Mark Hostetler, MD, FACEP
Hasmig Jinivizian, MD
David Markenson, MD, MBA, FACEP
Joshua Rocker, MD, FACEP
Brett Rosen, MD
Gerald R. Schwartz, MD, FACEP
Harold A. Sloas, DO
Annalise Sorrentino, MD, FACEP
Orel Swenson, MD
Michael Witt, MD, MPH, FACEP

STAFF
Loren Rives, MNA
Dan Sullivan
Stephanie Wauson

ENA PEDIATRIC COMMITTEE, 2016-2017
Tiffany Young, BSN, RN, CPNP, 2016 Chair
Joyce Foresman-Capuzzi, MSN, RN, CNS, 2017 Chair
Rose Johnson, RN
Heather Martin, DNP, MS. RN, PNP-BC
Justin Milici, MSN, RN
Cam Brandt, MS, RN
Nicholas Nelson, MS RN, EMT-P

BOARD LIAISONS
Maureen Curtis-Cooper, BSN, RN, 2016 Board Liaison
Kathleen Carlson, MSN, RN, 2017 Board Liaison

STAFF
Marlene Bokholdt, MSN, RN

REFERENCES
1. Institute of Medicine, Committee on Quality of Health Care in America. *To Err is Human: Building a Safer Health System*. Kohn LT, Corrigan JM, Donaldson MS, eds. Washington, DC: National Academies Press; 1999
2. Leape LL, Brennan TA, Laird N, et al. The nature of adverse events in hospitalized patients. Results of the Harvard Medical Practice Study II. *N Engl J Med*. 1991;324(6):377-384
3. Kaushal R, Bates DW, Landrigan C, McKenna KJ, Clapp MD, Federico F, Goldmann DA. Medication errors and adverse drug events in pediatric inpatients. *JAMA*. 2001;285(16):2114–2120
4. Woo Y, Kim HE, Chung S, Park BJ. Pediatric medication error reports in Korea adverse event reporting system database, 1989-2012: comparing with adult reports. *J Korean Med Sci.* 2015;30(4):371-377
5. Institute of Medicine, Committee of the Future of Emergency Care in the US Health System. *Emergency Care for Children: Growing Pains*. Washington, DC: National Academies Press; 2006
6. Shaw KN, Lillis KA, Ruddy RM, et al; Pediatric Emergency Care Applied Research Network. Reported medication events in a paediatric emergency research network: sharing to improve patient safety. *Emerg Med J*. 2013;30(10):815-819
7. Rinke ML, Moon M, Clark JS, Mudd S, Miller MR. Prescribing errors in a pediatric emergency department. *Pediatr Emerg Care*. 2008;24(1):1-8
8. Berg LM, Källberg AS, Göransson KE, Östergren J, Florin J, Ehrenberg A. Interruptions in emergency department work: an observational and interview study. *BMJ Qual Saf*. 2013;22(8):656-663
9. Thomasset KB, Faris R. Survey of pharmacy services provision in the emergency department. *Am J Health Syst Pharm*. 2003;60(15):1561-1564
10. Cesarz JL, Steffenhagen AL, Svenson J, Hamedani AG. Emergency department discharge prescription interventions by emergency medicine pharmacists. *Ann Emerg Med*. 2013;61(2):209-214
11. Patanwala AE, Warholak TL, Sanders AB, Erstad BL. A prospective observational study of medication errors in a tertiary care emergency department. *Ann Emerg Med*. 2010;55(6):522-526
12. American Academy of Pediatrics, Task Force on Medical Informatics. Special requirements for electronic medical record systems in pediatrics. *Pediatrics*. 2001;108(2):513-515
13. Gausche-Hill M, Schmitz C, Lewis RJ. Pediatric preparedness of US emergency departments: a 2003 survey. *Pediatrics*. 2007;120(6):1229-1237
14. Hoyle JD, Davis AT, Putman KK, Trytko JA, Fales WD. *Prehosp Emerg Care*. Medication dosing errors in pediatric patients treated by emergency medical services. 2012;16(1):59-66
15. Kozer E, Scolnik D, Macpherson A, et al. Variables associated with medication errors in pediatric emergency medicine. *Pediatrics*. 2002;110(4):737-742
16. Sard BE, Walsh KE, Doros G, Hannon M, Moschetti W, Bauchner H. Retrospective evaluation of a computerized physician order entry adaptation to prevent prescribing errors in a pediatric emergency department. *Pediatrics*. 2008;122(4):782-787
17. Shaw KN, Lillis KA, Ruddy RM, et al. Reported medication events in a paediatric emergency research network: sharing to improve patient safety. Pediatric Emergency Care Applied Research Network. *Emerg Med J*. 2013;30(10):815-819
18. Marcin JP, Dharmar M, Cho M, et al. Medication errors among acutely ill and injured children treated in rural emergency departments. *Ann Emerg Med*. 2007;50(4):361-367

19. Glover ML, Sussmane JB. Assessing pediatrics residents' mathematical skills for prescribing medication: a need for improved training. *Acad Med*. 2002;77(10):1007-1010
20. Lesar TS.Tenfold medication dose prescribing errors. *Ann Pharmacother*. 2002;36(12):1833-1839
21. Doherty C, Mc Donnell C. Tenfold medication errors: 5 years' experience at a university-affiliated pediatric hospital. *Pediatrics*. 2012;129(5):916-924
22. Harskamp-van Ginkel MW, Hill KD, Becker KC, et al. Best Pharmaceuticals for Children Act–Pediatric Trials Network Administrative Core Committee. Drug dosing and pharmacokinetics in children with obesity: a systematic review. *JAMA Pediatr*. 2015;169(7):678-685
23. Miller JL, Johnson PN, Harrison DL, Hagemann TM. Evaluation of inpatient admissions and potential antimicrobial and analgesic dosing errors in overweight children. *Ann Pharmacother*. 2010;44(1):35-42
24. Young KD, Korotzer NC. Weight estimation methods in children: a systematic review. *Ann Emerg Med*. 2016;68(4):441-451.e10
25. Zorc JJ, Hoffman JM, Harper MB. IT in the ED: a new section of Pediatric Emergency Care. *Pediatr Emerg Care*. 2012;28(12):1399-1401
26. Kirk RC, Li-Meng Goh D, Packia J, Min Kam H, Ong BK. Computer calculated dose in paediatric prescribing. *Drug Saf*. 2005;28(9):817-824
27. van der Sijs H, Aarts J, Vulto A, Berg M. Overriding of drug safety alerts in computerized physician order entry. *J Am Med Inform Assoc*. 2006;13(2):138-147
28. Her QL, Seger DL, Amato MG, et al. Development of an algorithm to assess appropriateness of overriding alerts for nonformulary medications in a computerized prescriber-order-entry system. *Am J Health Syst Pharm*. 2016;73(1):e34-e35
29. Radley DC, Wasserman MR, Olsho LE, et al. Reduction in medication errors in hospitals due to adoption of computerized provider order entry systems. *J Am Med Inform Assoc*. 2013;20(3):470-476
30. Kozer E, Scolnik D, MacPherson A, Rauchwerger D, Koren G. Using a preprinted order sheet to reduce prescription errors in a pediatric emergency department: a randomized, controlled trial. *Pediatrics*. 2005;116(6):1299–1302
31. Larose G, Bailey B, Lebel D. Quality of orders for medication in the resuscitation room of a pediatric emergency department. *Pediatr Emerg Care*. 2008;24(9):609–614
32. Broussard M, Bass PF III, Arnold CL, McLarty JW, Bocchini JA Jr. Preprinted order sets as a safety intervention in pediatric sedation. *J Pediatr*. 2009;154(6):865–868
33. Burmester MK, Dionne R, Thiagarajan RR, Laussen PC. Interventions to reduce medication prescribing errors in a paediatric cardiac intensive care unit. *Intens Care Med*. 2008;34(6):1083–1109
34. Institute for Safe Medication Practices. ISMP Medication Safety Alert. Progress with preventing name confusion errors. August 9, 2007. Available at: https://www.ismp.org/newsletters/acutecare/articles/20070809.asp. Accessed November 16, 2016
35. Murray KL, Wright D, Laxton B, et al. Implementation of standardized pediatric i.v. medication concentrations. *Am J Health Syst Pharm*. 2014;71(17):1500-1508
36. American Society of Health-System Pharmacists. ASHP awarded FDA contract to improve safety of intravenous and oral liquid medications: standardization contract is part of FDA's Safe Use Initiative [press release]. Available at: http://www.ashp.org/menu/AboutUs/ForPress/PressReleases/PressRelease.aspx?id=874. Accessed November 16, 2016
37. Shaw KN, Ruddy RM, Olsen CS, Lillis KA, Mahajan PV, Dean JM, Chamberlain JM; Pediatric Emergency Care Applied Research Network. Pediatric patient safety in emergency departments: unit characteristics and staff perceptions. *Pediatrics*. 2009;124(2):485-493
38. Thomas MC, Acquisto NM, Shirk MB, et al. A national survey of emergency pharmacy practice in the United States. *Am J Health Syst Pharm*. 2016;73(6):386-394

39. American College of Emergency Physicians. Clinical pharmacist services in the emergency department. June 2015. Available at: https://www.acep.org/clinical---practice-management/clinical-pharmacist-services-in-the-emergency-department/. Accessed November 16, 2016
40. Johnston R, Saulnier L, Gould O. Best possible medication history in the emergency department: Comparing pharmacy technicians and pharmacists. *Can J Hosp Pharm*. 2010;63(5):359-365
41. Emergency Nurses Association. Position Statement: Role of the Emergency Nurse in Medication Reconciliation. Des Plaines, IL: Emergency Nurses Association; 2015. Available at: https://www.ena.org/docs/default-source/resource-library/practice-resources/position-statements/roleofednurseinmedicationreconcilation.pdf?sfvrsn=8c413f53_8. Accessed November 29, 2016
42. American Academy of Pediatrics; Committee on Pediatric Emergency Medicine and Council on Clinical Information Technology; American College of Emergency Physicians; Pediatric Emergency Medicine Committee. Policy statement: emergency information forms and emergency preparedness for children with special health care needs. *Pediatrics*. 2010;125(4):829-837
43. Stone BL, Boehme S, Mundorff MB, Maloney CG, Srinvastava R. Hospital admission medication reconciliation in medically complex children: an observational study. *Arch Dis Child*. 2010;95(4):250-255
44. Provine AD, Simmons EM, Bhagat PH. Establishment and evaluation of pharmacist-managed admission medication history and reconciliation process for pediatric patients. *J Pediatr Pharmacol Ther*. 2014;19(2):98-102
45. Gardner B, Graner K. Pharmacists' medication reconciliation-related clinical interventions in a children's hospital. *Jt Comm J Qual Patient Saf*. 2009;35(5):278-282
46. American Society of Health-System Pharmacists. ASHP guidelines on emergency medicine pharmacist services. Available at: http://www.ashp.org/DocLibrary/BestPractices/SpecificGdlEmergMed.aspx. Accessed November 16, 2016
47. Scott DM, Friesner DL, Rathke AM, Doherty-Johnsen S. Medication error reporting in rural critical access hospitals in the North Dakota Telepharmacy Project. *Am J Health Syst Pharm*. 2014;71(1):58-67
48. Cole SL, Grubbs JH, Din C, Nesbitt TS. Rural inpatient telepharmacy consultation demonstration for after-hours medication review. *Telemed J E Health*. 2012;18(7):530-537
49. Patanwala AE, Sanders AB, Thomas MC, et al. A prospective, multicenter study of pharmacist activities resulting in medication error interception in the emergency department. *Ann Emerg Med*. 2012;59(5):369-373
50. Aldridge VE, Park HK, Bounthavong M, Morreale AP. Implementing a comprehensive, 24-hour emergency department pharmacy program. *Am J Health Syst Pharm*. 2009;66(21):1943-1947
51. Lada P, Delgado G Jr. Documentation of pharmacists' interventions in an emergency department and associated cost avoidance. *Am J Health Syst Pharm*. 2007;64(1):63-68
52. Warholak TL, Queiruga C, Roush R, Phan H. Medication error identification rates by pharmacy, medical, and nursing students. *Am J Pharm Educ*. 2011;75(2):24
53. US Department of Transportation, National Highway Traffic Safety Administration. National Emergency Medical Services Education Standards. DOT HS 811 077A. Available at: http://www.ems.gov/pdf/811077a.pdf. Accessed November 16, 2016
54. Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in pediatrics. Available at: https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/320_pediatrics_2016.pdf. Accessed November 16, 2016
55. Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in emergency medicine. Available at:

https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/110_emergency_medicine_2016.pdf. Accessed November 16, 2016
56. Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in pediatric emergency medicine. Available at: http://www.acgme.org/portals/0/pfassets/programrequirements/114_emergency_med_peds_2016.pdf. Accessed November 16, 2016
57. Accreditation Council for Pharmacy Education. ACPE accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree. Available at: https://acpe-accredit.org/pdf/FinalS2007Guidelines2.0.pdf. Accessed November 16, 2016
58. Emergency Medical Services for Children/National Resource Center. Pediatric Patient Safety Toolbox. Available at: https://emscimprovement.center/resources/toolboxes/pediatric-patient-safety-toolbox/. Accessed November 16, 2016
59. Poon EG, Cina JL, Churchill W, et al. Medication dispensing errors and potential adverse drug events before and after implementing barcode technology in the pharmacy. *Ann Intern Med*. 2006;145(6):426-434
60. Rinke ML, Bundy DG, Velasquez CA, Rao S, Zerhouni Y, Lobner K, Blanck JF, Miller MR.Interventions to reduce pediatric medication errors: a systematic review. *Pediatrics*. 2014;134(2):338-360
61. ED-based pharmacists make a big dent in medication errors. *ED Manag*. 2014;26(8):91-94
62. Manrique-Rodríguez S, Sánchez-Galindo AC, López-Herce J, et al. Impact of implementing smart infusion pumps in a pediatric intensive care unit. *Am J Health Syst Pharm*. 2013;70(21):1897-1906
63. Nugent P, Vitale BA. Medication administration. In: *Fundamentals of Nursing: Content Review Plus Practice Questions*. Philadelphia, PA: F.A. Davis Company; 2013
64. Elliott M, Liu Y.The nine rights of medication administration: an overview. *Br J Nurs*. 2010;19(5):300-305
65. Pauly-O'Neill, S. Beyond the five rights: improving patient safety in pediatric medication administration through simulation. Clin Simul Nurs. 2009;5(5):e181-e186
66. Westbrook JI, Woods A, Rob MI, Dunsmuir WT, Day RO. Association of interruptions with an increased risk and severity of medication administration errors. *Arch Intern Med*. 2010;170(8):683-690
67. Anthony K, Wiencek C, Bauer C, Daly B, Anthony MK. No interruptions please: impact of a No Interruption Zone on medication safety in intensive care units. *Crit Care Nurse*. 2010;30(3):21-29
68. Physical environments that promote safe medication use. The United States Pharmacopeial Convention. *Revision Bulletin*. 2010. Available at: http://www.usp.org/sites/default/files/usp_pdf/EN/USPNF/gc1066PhysicalEnvironments.pdf. Accessed November 16, 2016
69. The Joint Commission. Preventing pediatric medication errors. *Sentinel Event Alert*. 2008;(39)1-4. Available at: http://www.jointcommission.org/assets/1/18/SEA_39.PDF. Accessed November 16, 2016
70. American Hospital Association, Health Research and Educational Trust, Institute for Safe Medication Practices. Pathways for Medication Safety: Looking Collectively at Risk. Available at: http://www.ismp.org/tools/pathwaysection2.pdf. Accessed November 16, 2016
71. Yin HS, Dreyer BP, Ugboaja DC, et al. Unit of measurement used and parent medication dosing errors. *Pediatrics*. 2014;134(2):e354-e361
72. Yin HS, Dreyer BP, van Schaick L, et al. Liquid medication dosing errors in children: role of provider counseling strategies. *Acad Pediatr*. 2014;14(3):262-270
73. Chan HK, Hassali MA, Lim CJ, et al. Using pictograms to assist caregivers in liquid medication administration: a systematic review. *J Clin Pharm Ther*. 2015;40(3):266-272
74. American Academy of Pediatrics, Committee on Drugs. Metric units and the preferred dosing of orally administered liquid medications. *Pediatrics*. 2015;135(4):784-787

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Pediatric Readiness in Emergency Medical Services Systems

Originally approved January 2019

A joint policy statement of the American Academy of Pediatrics, American College of Emergency Physicians, Emergency Nurses Association, National Association of Emergency Medical Services Physicians, and National Association of Emergency Medical Technicians

POLICY STATEMENT
Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

Brian Moore, MD*; Manish I. Shah, MD, MS; Sylvia Owusu-Ansah, MD, MPH; Toni Gross, MD, MPH; Kathleen Brown, MD; Marianne Gausche-Hill, MD; Katherine Remick, MD; Kathleen Adelgais, MD; John Lyng, MD, NRP (paramedic); Lara Rappaport, MD; Sally Snow, RN, BSN; Cynthia Wright-Johnson, MSN, RNC; Julie C. Leonard, MD

AMERICAN ACADEMY OF PEDIATRICS
Committee on Pediatric Emergency Medicine and Section on Emergency Medicine EMS Subcommittee

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
Emergency Medical Services Committee

EMERGENCY NURSES ASSOCIATION
Pediatric Committee

NATIONAL ASSOCIATION OF EMERGENCY MEDICAL SERVICES PHYSICIANS
Standards and Clinical Practice Committee

NATIONAL ASSOCIATION OF EMERGENCY MEDICAL TECHNICIANS
Emergency Pediatric Care Committee

ABSTRACT. This is a joint policy statement from the American Academy of Pediatrics, American College of Emergency Physicians, Emergency Nurses Association, National Association of Emergency Medical Services Physicians, and National Association of Emergency Medical Technicians

on pediatric readiness in emergency medical services systems.

ABBREVIATIONS: ED, emergency department; EMS, emergency medical services.

INTRODUCTION

Out-of-hospital emergency care typically involves emergency medical technicians, paramedics, and other licensed medical providers who work in emergency medical services (EMS) systems on ground ambulances and fixed or rotor-wing aircraft that are dispatched to an emergency when either a bystander calls 911 or when a patient requires interfacility transport for a medical illness or traumatic injury. Because out-of-hospital emergency care of children plays a critical role in the continuum of health care that also involves primary prevention, hospital-based acute care, rehabilitation, and return to the medical home, the unique needs of children must be addressed by EMS systems.[1-5] Pediatric readiness encompasses the presence of equipment and medications, usage of guidelines and policies, availability of education and training, incorporation of performance improvement practices, and integration of EMS physician medical oversight to equip EMS systems to deliver optimal care to children.[6-8] It has been shown that emergency departments (EDs) are more prepared to care for children when a pediatric emergency care coordinator is responsible for championing and making recommendations for policies, training, and resources pertinent to the emergency care of children.[9,10] The specialty of EMS medicine has the potential to derive similar benefits when members of the EMS community are personally invested in pediatric patient care. Although a critical aspect of pediatric readiness in EMS involves strong EMS physician oversight of these investments, a discussion of physician oversight of pediatric care in EMS is outside the scope of this article. This topic is, however, well addressed in the National Association of Emergency Medical Services Physicians position statement "Physician Oversight of Pediatric Care in Emergency Medical Services." This policy statement is accompanied by a technical report published simultaneously.[11]

RECOMMENDATIONS

To provide infrastructure designed to support the out-of-hospital emergency care of children, the American Academy of Pediatrics, American College of Emergency Physicians, Emergency Nurses Association, National Association of Emergency Medical Services Physicians, and National Association of Emergency Medical Technicians believe that EMS systems and agencies should undertake the following:

- Include pediatric considerations in EMS planning and development of pediatric EMS dispatch protocols, operations, and physician oversight; for example, as outlined in the National Association of Emergency Medical Services Physicians position statement "Physician Oversight of Pediatric Care in Emergency Medical Services"[1]
- Collaborate with medical professionals with significant experience or expertise in pediatric emergency care, public health experts, and family advocates for the development and improvement of EMS operations, treatment guidelines, and performance improvement initiatives[2]
- Integrate evidence-based, pediatric-specific elements into the direct and indirect medical oversight that constitute the global EMS oversight structure[4]
- Have pediatric-specific equipment and supplies available, using national consensus recommendations as a guide, and verify that EMS providers are competent in using them[3,4,12-15]
- Develop processes for delivering comprehensive, ongoing pediatric-specific education and evaluating pediatric-specific psychomotor and cognitive competencies of EMS providers[13,14,16-18]
- Promote education and awareness among EMS providers about the unique physical characteristics, physiologic responses, and psychosocial needs of children with an illness or injury[19-21]
- Implement practices to reduce pediatric medication errors[22,23]
- Include pediatric-specific measures in periodic performance improvement practices that address morbidity and mortality[4]
- Submit data to a statewide database that is compliant with the most recent version of the National EMS Information System and work with hospitals to which it transports patients to track pediatric patient-

centered outcomes across the continuum of care[4]
- Develop, maintain, and locally enforce policies for the safe transport of children in emergency vehicles[4]
- Develop protocols for destination of pediatric patients, with consideration of regional resources and weighing the risks and benefits of keeping children in their own communities[4]
- Collaborate, along with receiving EDs, to provide pediatric readiness across the care continuum[4-10]
- Include provisions for caring for children and families in emergency preparedness planning and exercises, including the care and tracking of unaccompanied children and timely family reunification in the event of disasters[3,4,24]
- Promote overall patient- and family-centered care, which includes using lay terms to communicate with patients and families, having methods for accessing language services to communicate with non–English-speaking patients and family members, narrating actions, and alerting patients and caregivers before interventions are performed; in addition, allow family members to remain close to their child during resuscitation activities and to practice cultural or religious customs as long as they are not interfering with patient care[19]
- Have policies and procedures in place to allow a family member or guardian to accompany a pediatric patient during transport, when appropriate and feasible[19]
- Consider using resources compiled by the Emergency Medical Services for Children program when implementing the recommendations noted here[25]

CONCLUSION

Ill and injured children and their families have unique needs that can be magnified when the child's ailment is serious or life threatening. Resource availability and pediatric readiness across EMS agencies are variable. Providing high-quality EMS care to children requires an infrastructure designed to support the care of pediatric patients and their families. Therefore, it is important that EMS physicians, administrators, and EMS personnel collaborate with pediatric acute care experts to optimize EMS care through the development of care models to minimize morbidity and mortality in children as a result of illness and injuries.

AFFILIATIONS: Department of Emergency Medicine, University of New Mexico Health Sciences Center, Albuquerque, NM (Moore); Section of Emergency Medicine, Department of Pediatrics, Baylor College of Medicine and Texas Children's Hospital, Houston, TX (Shah); Division of Emergency Medical Services, Department of Pediatrics and Emergency Department, University of Pittsburgh Medical Center Children's

Hospital of Pittsburgh, Pittsburgh, PA (Owusu-Ansah); Department of Emergency Medicine, Children's Hospital New Orleans and Louisiana State University Health New Orleans, New Orleans, LA (Gross);

Departments of Pediatrics and Emergency Medicine, School of Medicine and Health Sciences, The George Washington University, Washington, DC, and Division of Emergency Medicine, Children's National Medical

Center, Washington, DC (Brown); Departments of Emergency Medicine and Pediatrics, David Geffen School of Medicine, University of California, Los Angeles and Harbor–University of California, Los Angeles Medical Center, Los Angeles, CA (Gausche-Hill); San Marcos Hays County Emergency Medical Services, San Marcos, TX, Austin-Travis County Emergency Medical Services System, Austin, TX, and Department of Pediatrics, Dell Medical School, The University of Texas at Austin, Austin, TX (Remick); Department of Pediatrics, School of Medicine, University of Colorado, Aurora, CO (Adelgais); Level I Adult Trauma Center and Level II Pediatric Trauma Center, North Memorial Health Hospital, Minneapolis, MN (Lyng); Department of Pediatric Emergency Medicine and Urgent Care Center, Denver Health Medical Center, Denver, CO (Rappaport); Pediatric Emergency and Trauma Nursing, Fort Worth, TX (Snow); Emergency Medical Services for Children, Maryland Institute for Emergency Medical Services Systems, Baltimore, MD (Wright-Johnson); and Division of Emergency Medicine, Department of Pediatrics, Nationwide Children's Hospital and College of Medicine, The Ohio State University, Columbus, OH (Leonard).

FUNDING: No external funding.

CONTRIBUTORS' STATEMENT: Drs. Moore and Shah were the 2 primary authors, but all of the listed authors contributed sections of the article and reviewed and revised subsequent drafts. This was done in conjunction with the American Academy of Pediatrics staff and Board of Directors, as well as the Boards of Directors of the American College of Emergency Physicians, the Emergency Nurses Association, the National Association of Emergency Medical Services Physicians, and the National Association of Emergency Medical Technicians. All of these organizations have approved the final article as submitted.

FINANCIAL DISCLOSURE: Dr. Shah has disclosed the following: Health Resources and Services Administration, EMSC Program. Relationship: Pediatric Prehospital Readiness Steering Committee member. Amount: $2000 per year maximum for travel reimbursement only. All other authors indicated they have no financial relationships relevant to this article to disclose.

POTENTIAL CONFLICT OF INTEREST: The authors have indicated they have no potential conflicts of interest to disclose.

REFERENCES

1. National Association of EMS Physicians. Physician oversight of pediatric care in emergency medical services. *Prehosp Emerg Care*. 2017;21:88.
2. Remick K, Gross T, Adelgais K, et al. Resource document: coordination of pediatric emergency care in EMS systems. *Prehosp Emerg Care*. 2017;21:399-407.
3. Institute of Medicine; Committee of the Future of Emergency Care in the US Health System. *Emergency Medical Services at the Crossroads*. Washington, DC: National Academies Press; 2006.
4. Institute of Medicine; Committee of the Future of Emergency Care in the US Health System. *Emergency Care for Children: Growing Pains*. Washington, DC: National Academies Press; 2006.
5. Gausche-Hill M, Johnson RW, Warden CR, et al. The role of the emergency physician in emergency medical services for children (EMSC). *Ann Emerg Med*. 2003;42:206-215.
6. American College of Emergency Physicians, Pediatric Committee; American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Guidelines for preparedness of emergency departments that care for children: a call to action. *Ann Emerg Med*. 2001;37:389-391.

7. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine; American College of Emergency Physicians, Pediatric Committee; Emergency Nurses Association, Pediatric Committee. Policy statement: guidelines for care of children in the emergency department. *Pediatrics*. 2009;124:1233-1243.
8. Gausche-Hill M. Integrating children into our emergency care system: achieving the vision. *Ann Emerg Med*. 2006;48:131-134.
9. Gausche-Hill M, Ely M, Schmuhl P, et al. A national assessment of pediatric readiness of emergency departments. *JAMA Pediatr*. 2015;169:527-534.
10. Remick K, Kaji AH, Olson L, et al. Pediatric readiness and facility verification. *Ann Emerg Med*. 2016;67:320-328.e1.
11. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, Section on Emergency Medicine, Subcommittee on EMS, Section on Surgery. Technical report: pediatric readiness in emergency medical services systems. Pediatrics. 2019.
12. Glaeser PW, Linzer J, Tunik MG, et al. Survey of nationally registered emergency medical services providers: pediatric education. *Ann Emerg Med*. 2000;36:33-38.
13. Hansen M, Meckler G, Dickinson C, et al. Children's safety initiative: a national assessment of pediatric educational needs among emergency medical services providers. *Prehosp Emerg Care*. 2015;19:287-291.
14. Gausche M. Pediatric continuing education for prehospital providers: is it time to mandate review of pediatric knowledge and skills? *Ann Emerg Med*. 2000;36:72-74.
15. American Academy of Pediatrics; American College of Emergency Physicians; American College of Surgeons Committee on Trauma; Emergency Medical Services for Children; Emergency Nurses Association; National Association of EMS Physicians; National Association of State EMS Officials. Equipment for ground ambulances. *Prehosp Emerg Care*. 2014;18:92-97.
16. Su E, Schmidt TA, Mann NC, et al. A randomized controlled trial to assess decay in acquired knowledge among paramedics completing a pediatric resuscitation course. *Acad Emerg Med*. 2000;7:779-786.
17. Henderson DP, Gausche M, Goodrich SM, et al. Education of paramedics in pediatric airway management: effects of different retraining methods on self-efficacy and skill retention. *Acad Emerg Med*. 1998;5:429.
18. Gausche M, Henderson DP, Brownstein D, et al. The education of out-of-hospital medical personnel in pediatrics: report of a national task force. *Ann Emerg Med*. 1998;31:58-63.
19. Ayub EM, Sampayo EM, Shah MI, et al. Prehospital providers' perceptions on providing patient and family centered care. *Prehosp Emerg Care*. 2017;21:399-407.
20. Schonfeld DJ, Demaria T; American Academy of Pediatrics; Disaster Preparedness Advisory Council and Committee on Psychosocial Aspects of Child and Family Health. Providing psychosocial support to children and families in the aftermath of disasters and crises. *Pediatrics*. 2015;136:e1120-e1130.
21. Schonfeld DJ, Demaria T; American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health and Disaster Preparedness Advisory Council. Supporting the grieving child and family. *Pediatrics*. 2016;138:e20162147.
22. Kaji A, Gausche-Hill M, Conrad H, et al. EMS system changes reduce pediatric epinephrine dosing errors in the prehospital setting. *Pediatrics*. 2006;118:1493-1500.
23. Lammers R, Byrwa M, Fales W. Root causes of errors in a simulated prehospital pediatric emergency. *Acad Emerg Med*. 2012;19:37-47.
24. American Academy of Pediatrics; Disaster Preparedness Advisory Council. Medical countermeasures for children in public health emergencies, disasters, or terrorism. *Pediatrics*. 2016;137: e20154273.
25. Emergency Medical Services for Children Innovation and Improvement Center. Prehospital Based Care. Available at: https://emscimprovement.center/domains/prehospital-care/. Accessed November 19, 2019.

LEAD AUTHORS
Brian Moore, MD
Manish I. Shah, MD, MS
Sylvia Owusu-Ansah, MD, MPH

Toni Gross, MD, MPH
Kathleen Brown, MD
Marianne Gausche-Hill, MD
Kate Remick, MD
Kathleen Adelgais, MD
John Lyng, MD, FAEMS, FACEP, NRP (paramedic)
Lara Rappaport, MD
Sally Snow, RN, BSN
Cynthia Wright-Johnson, MSN, RNC
Julie Leonard, MD

AAP COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 2017-2018
Joseph Wright, MD, MPH, FAAP, Chairperson
Terry Adirim, MD, MPH, FAAP
Michael S. D. Agus, MD, FAAP
James Callahan, MD, FAAP
Toni Gross, MD, MPH, FAAP
Natalie Lane, MD, FAAP
Lois Lee, MD, MPH, FAAP
Suzan Mazor, MD, FAAP
Prashant Mahajan, MD, MPH, MBA, FAAP
Nathan Timm, MD, FAAP

LIAISONS
Andrew Eisenberg, MD – American Academy of Family Physicians
Cynthia Wright Johnson, MSN, RN – National Association of State EMS Officials
Cynthiana Lightfoot, BFA, NRP – AAP Family Partnerships Network
Charles Macias, MD, MPH, FAAP – EMSC Innovation and Improvement Center
Brian Moore, MD, MPH, FAAP – National Association of EMS Physicians
Diane Pilkey, RN, MPH – Maternal and Child Health Bureau
Katherine Remick, MD, FAAP – National Association of Emergency Medical Technicians
Mohsen Saidinejad, MD, MBA, FAAP, FACEP – American College of Emergency Physicians
Sally Snow, RN, BSN, CPEN, FAEN – Emergency Nurses Association
Mary Fallat, MD, FAAP – American College of Surgeons

FORMER APP COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE MEMBERS, 2012-2016
Alice Ackerman, MD, MBA, FAAP
Thomas Chun, MD, MPH, FAAP
Gregory Conners, MD, MPH, MBA, FAAP
Edward Conway, Jr, MD, MS, FAAP
Nanette Dudley, MD, FAAP
Joel Fein, MD, FAAP
Susan Fuchs, MD, FAAP
Marc Gorelick, MD, MSCE, FAAP
Natalie Lane, MD, FAAP
Steven Selbst, MD, FAAP
Kathy Shaw, MD, MSCE, FAAP, Chair (2008-2012)
Joan Shook, MD, MBA, FAAP, Chair (2012-2016)

STAFF
Sue Tellez

ACEP EMERGENCY MEDICAL SERVICES COMMITTEE, 2017-2018
Jeffrey Goodloe, MD, FACEP, FAEMS, Chairperson
Kathleen Brown, MD, FACEP, FAAP, Workgroup Leader
Becky Abell, MD, FACEP
Roy Alson, MD, PhD, FACEP
Kerry Bachista, MD, FACEP
Lynthia Bowman, DO, FACEP
Heather Boynton, MD
Sara Ann Brown, MD, FACEP
Allen Chang, MD
Darby Copeland, EdD, RN, NRP
Robert De Lorenzo, MD, FACEP
Derek Douglas
Raymond Fowler, MD, FACEP
John Gallagher, MD, FACEP
Sheaffer Gilliam, MD
Frank Guyette, MD, FACEP
Dustin Holland, MD
Jeffrey Jarvis, MD, FACEP, EMT-P
Clinton Kalan, PA-C
Jacob Keeperman, MD, FACEP
Douglas Kupas, MD, FACEP
Julio Lairet, DO, FACEP
Michael Levy, MD, FACEP
Kristopher Lyon, MD, FACEP
Craig Manifold, DO, FACEP
Kristin McCabe-Kline, MD, FACEP
Howard Mell, MD, FACEP
Brian Miller, MD
Michael Millin, MD, MPH, FACEP
Brett Rosen, MD
Jared Ross, MD
Kevin Ryan, MD
Stephen Sanko, MD
Shira Schlesinger, MD, MPH
Charles Sheppard, MD, FACEP
Harry Sibold, MD, FACEP
Sullivan Smith, MD, FACEP
Michael Spigner, MD
Vincent Stracuzzi, MD
Christopher Tanski, MD, MS, EMT
Joseph Tennyson, MD, FACEP
Chelsea White, IV, MD, NREMT-P
David Wilcocks, MD
Allen Yee, MD, FACEP

STAFF
Rick Murray, EMT-P

BOARD LIAISON

Debra Perina, MD, FACEP

ENA PEDIATRIC COMMITTEE, 2016-2017
Tiffany Young, BSN, RN, CPNP, 2016 Chair
Joyce Foresman-Capuzzi, MSN, RN, CNS, 2017 Chair
Rose Johnson, RN
Heather Martin, DNP, MS RN, PNP-BC
Justin Milici, MSN, RN
Cam Brandt, MS, RN
Nicholas Nelson, MS RN, EMT-P

BOARD LIAISONS
Maureen Curtis-Cooper, BSN, RN, 2016 Board Liaison
Kathleen Carlson, MSN, RN, 2017 Board Liaison

STAFF
Catherine Olson, MSN, RN

NAEMSP STANDARDS AND CLINICAL PRACTICE COMMITTEE, 2017-2018
John Lyng, MD, FAEMS, FACEP, NRP (paramedic)

NAEMT EMERGENCY PEDIATRIC CARE COMMITTEE, 2017-2018
Shannon Watson, CCEMT-P, Chairperson
Katherine Remick, MD, Medical Director
Ann Dietrich, MD, Medical Director
Kyle Bates, MS, NREMT-P, CCEMT-P
Frank Flake, EMT-P
Gustavo Flores, MD, EMT-P

Published simultaneously in *Annals of Emergency Medicine, American Academy of Pediatrics.* and *Prehospital Emergency Care.*

https://doi.org/10.1016/j.annemergmed.2019.09.012

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Pediatric Readiness in the Emergency Department

Revised June 2018 with current title, April 2009

Originally approved December 2000 titled "Guidelines for Care of Children in the Emergency Department"

A joint policy statement of the American Academy of Pediatrics, the American College of Emergency Physicians, and the Emergency Nurses Association

Available online at
https://www.annemergmed.com/article/S0196-0644(18)31167-3/fulltext

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2022

Personal Protective Equipment Guidelines for Health Care Facility Staff

Revised September 2022, June 2016

Reaffirmed October 2009

Originally approved August 2003

The American College of Emergency Physicians (ACEP) believes a critical component of emergency preparedness is for health care facility staff to use personal protective equipment (PPE) that is appropriate to protect themselves, patients and others from chemical, biological, and radiological elements (CBRE). This basic expectation for the provision of both appropriate and adequate PPE allows staff to work under the safest conditions possible and to eliminate unnecessary risk. Recommendations for what type of PPE to use and when it should be used should only be made after thorough analysis of all available evidence-based information with continued re-assessment and modifications made as necessary. Guidance from Infection Control and Public Health Departments should then be appropriately reassessed and modified to assure consistency with evolving information.

Hospitals have standard precautions for blood-borne and respiratory pathogens, but these may not necessarily protect against every hazardous exposure. At the present time, there is little available evidence to help determine the level of PPE needed for health care facility staff in every situation. If limited or no evidence exists for a given response, utilization of PPE should be encouraged at a level commensurate to the perceived risk by the individual, which may be above and beyond baseline recommendations. PPE scarcity during times of increased PPE usage (ie, pandemic) compromises the health and safety of emergency care providers and patients and frequently undermines the confidence in healthcare leaders and systems. Scarce resource allocation measures such as the re-using of disposable PPE (ie, N-95 masks) should only be implemented under the careful guidance of lead agencies such as the National Institute for Occupational Safety and Health (NIOSH).

Essential protective measures depend heavily on the location of the decontamination area, the role of the health care facility in the community response to hazardous material (HAZMAT) incidents, and the hazard vulnerability analysis (HVA). Critical priorities include:

ensuring the safety of the health care facility staff; ensuring continuity of health care facility operations up to and including a possible determination for appropriately controlled hospital access; and providing initial triage and treatment for contaminated or exposed/potentially contaminated patients arriving at the health care facility seeking treatment.

Key elements in the selection process for appropriate PPE levels and decontamination facilities include:

- Forming strategic partnerships with response agencies, professional associations, accrediting bodies, governmental agencies, and others.
- Performing a hospital hazard vulnerability analysis consistent with community threats.
- Determining initial and on-going training requirements and equipment needs appropriate to the PPE level required at a facility, meeting at least current essential standards as determined by the CDC (Centers for Disease Control and Prevention), and with consideration to other federal regulating and credentialing agencies, such as NIOSH (National Institute of Occupational Safety and Health) and OSHA (Occupational Safety and Health Administration), and other response agency partnerships.

ACEP encourages a continual process of community planning and health care worker education coupled with initial and on-going training. ACEP strongly encourages federal appropriations for adequate research to determine a scientific basis for PPE level and decontamination procedures at hospitals and health care facilities.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2017

Physician Credentialing and Delineation of Clinical Privileges in Emergency Medicine

Revised April 2017, October 2014, June 2006 and June 2004

Reaffirmed October 1999

Revised with current title September 1995, June 1991

Originally approved with the title "Guidelines for Delineation of Clinical Privileges in Emergency Medicine" April 1985.

As an adjunct to this policy statement, ACEP has created a Policy Resource and Education Paper (PREP) titled "Guidelines for Credentialing and Delineation of Clinical Privileges in Emergency Medicine."

Physician credentialing is the process of gathering information regarding a physician's qualifications for appointment to the medical staff, whereas delineation of clinical privileges denotes those specific services and procedures that a physician is deemed qualified to provide or perform. The specific processes for physician credentialing and delineation of clinical privileges must be defined by medical staff and department bylaws, policy, rules, or regulations. Each member of the medical staff must be subject to periodic review as part of the performance improvement activities of the organization.

The American College of Emergency Physicians (ACEP) believes that:

- The exercise of clinical privileges in the emergency department is governed by the rules and regulations of the department;
- The ED medical director* is responsible for periodic assessment of clinical privileges of emergency physicians;
- When a physician applies for reappointment to the medical staff and for clinical privileges, including renewal, addition, or rescission of privileges, the reappraisal process must include assessment of current competence by the ED medical director;

The ED medical director will, with the input of department members, determine the means by which each emergency physician will maintain competence and skills and the mechanism by which the proficiency of each physician will be monitored.

For the purposes of specialty recognition, an emergency physician is defined as one who is certified (or eligible to be certified) by the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM) or an equivalent international certifying body recognized by ABEM or AOBEM in emergency medicine or pediatric emergency medicine, or who is eligible for active membership in the American College of Emergency Physicians.[1]

ACEP believes that the ED medical director* should be responsible for assessing and making recommendations to the hospital's credentialing body related to the qualifications of providers of emergency care with respect to the clinical privileges granted to them. At a minimum, those applying for privileges as emergency physicians should be eligible for ACEP membership. Board certification by ABEM or AOBEM, or pediatric emergency medicine subspecialty certification by the American Board of Pediatrics is an excellent, but not the sole benchmark for decisions regarding an individual's ability to practice emergency medicine. Especially in rural areas, physicians who trained in other specialties may provide emergency care and be granted privileges by an objective measurement of care provided, sufficient experience, prior training, and evidence of continuing medical education.

*ED medical director refers to the chair, medical director or their designee.

Reference:

1. American College of Emergency Physicians policy statement titled "Definition of an Emergency Physician" approved by the ACEP Board revised April 2017.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Physician Impairment

Revised February 2020,
October 2013,
October 2006

Reaffirmed September 1999

Revised April 1994

Originally approved
September 1990

The American College of Emergency Physicians (ACEP) recognizes the need for mental and physical health and well-being among emergency physicians, while assuring patient safety.

Personal health problems including physical or mental illness, injury, aging, burnout, circadian rhythm disruption, substance use disorders, and other conditions can detract from physician performance, and may interfere with a physician's ability to engage safely in patient care. Personal and professional stressors not rising to the level of health problems may also hinder a physician's ability to function effectively in the workplace.

The existence of a health problem in a physician is NOT synonymous with occupational impairment. Because of their training and dedication, most physicians with appropriately managed personal health problems and other stressors are able to function safely and effectively in the workplace.

"Physician impairment", on the other hand, exists when a physician becomes unable to practice medicine with reasonable skill and safety because of personal health problems or other stressors. In most physicians, impairment is a self-limited state that is amenable to intervention, assistance, recovery, and/or resolution.

ACEP endorses the following principles:

- Emergency physician groups, employers, and residency programs should support physician wellness, facilitate physician resiliency, assist with physician burnout prevention, promote early recognition of and non-punitive mechanisms for reporting potential physician impairment, and offer early intervention and treatment or other forms of assistance to help prevent or resolve physician impairment.
- A physician who seeks treatment and assumes the role of patient is entitled to the same rights under state and federal law as any other patient. A physician-patient is owed the same ethical duties owed to any other patient under healthcare professional codes of medical ethics.
- Voluntarily withdrawing from practice while impaired, receiving treatment for a potentially impairing personal health problem, or requesting a federally required accommodation for a disability should not result in retaliation or professional disciplinary action for a physician.

- A currently impaired physician should proactively and voluntarily refrain from the practice of medicine. If a physician is suspected of continuing to practice medicine while currently impaired, colleagues should intervene to ensure that the physician withdraws from practice and is offered assistance until no longer impaired. A currently impaired physician who refuses to voluntarily withdraw from practice may be required by licensing and credentialing bodies to involuntarily refrain from the practice of medicine until found to be no longer impaired. If such action is taken, the physician should be afforded both adequate procedural due process and clearly delineated substantive due process protections.
- Licensing and credentialing bodies that inquire about the physical or mental health of applicants and licensees should be encouraged to use the following language: "Are you currently suffering from any condition for which you are not being appropriately treated that impairs your judgment or adversely affects your ability to practice medicine in a competent, ethical and professional manner?"[1]
- Licensing and credentialing bodies should not ask applicants and licensees about their past history of diagnosis or treatment for mental disorders, substance use disorders, physical disorders, and/or disabilities, focusing instead of current impairment. Licensing and credentialing bodies should provide "safe haven" non-reporting for physician seeking to obtain, renew, or regain licensure who are either currently undergoing treatment or are in stable long-term recovery from those disorders, and who are able to practice medicine with reasonable skills and safety with provision of reasonable accommodations for disabilities when needed.[2]
- Licensing and credentialing bodies should develop written policies that ensure a fair, reasonable, and confidential assessment of any physician who is reasonably suspected of being currently impaired.
  - Such policies should conform to all state and federal laws and regulations pertaining to disability discrimination, health care privacy, patient rights, and physician health and potential impairment.
  - Such policies should include provisions regarding the return to practice of a previously impaired emergency physician who is licensed and has recovered the ability to practice medicine with reasonable skills and safety.
  - Such policies should delineate mechanisms for compliance with state and federal laws and regulations requiring reasonable accommodations for otherwise qualified physicians with disabilities.

[1] Adapted from: Federation of State Medical Board, April 2018, "Physician Wellness and Burnout". Retrieved from http://www.fsmb.org/siteassets/advocacy/policies/policy-on-wellness-and-burnout.pdf

[2] Jones JTR, North CS, Vogel-Scibilia S, Myers MF, Owen RR. Medical Licensure Questions About Mental Illness and Compliance with the Americans With Disabilities Act. The journal of the American Academy of Psychiatry and the Law. 2018;46(4):458-471.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2016

Physician Medical Direction of Emergency Medical Services Education Programs

Revised September 2016

Reaffirmed October 2008, October 2002

Originally approved January 1997

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) titled "Physician Medical Direction of EMS Educational Programs"

The American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the National Association of EMS Educators (NAEMSE) believe that changing technology, advances in research, and changing health care delivery systems, require the active involvement of knowledgeable, identifiable, and responsible physician medical directors in the provision of emergency medical services (EMS) education programs, including initial and continuing education programs.

The role of the physician medical director of an EMS education program is:

- To approve the medical and academic qualifications of the faculty, the accuracy of the medical content, and the accuracy and quality of medical instruction given by the faculty; to routinely review student performance and progress and attest that the students have achieved the desired exit-level of competence prior to graduation; and
- To participate in faculty selection and curriculum development, maintain authority over presentation of medical content, and to assure that faculty teach medical practice in accordance with the best available evidence and current standards of prehospital care.
- To serve as an active member of the program's education team helping to ensure quality instruction and student success.

The physician medical director's qualifications should include:

- knowledge of current EMS scope of practice and legislation relating to education programs;
- training and experience in emergency care delivery and medical direction of EMS systems; and
- appropriate credentials attesting to experience in coordinating and teaching related education programs.

The physician medical director's qualifications will meet or exceed those described in the Standards and Guidelines for the Accreditation of Educational Programs in the Emergency Medical Services Professions. The

standards are published by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP) and reflect broad consensus on behalf of emergency medicine related agencies. The physician medical director should be provided with compensation commensurate with responsibility.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Physician Reporting of Potentially Impaired Drivers

Revised April 2023

Reaffirmed January 2017

Originally approved April 2011

The American College of Emergency Physicians (ACEP) believes:

- Reporting of potentially impaired drivers should be individualized to the patient's clinical condition and the objective risk posed to the patient and public by continued driving; and
- Physicians exercising good faith clinical judgments should have protection from liability for their reporting actions.

ACEP opposes mandatory reporting of entire classes of patients or diagnoses (eg, epilepsy) unless compelling evidence exists for a public health benefit for such reporting.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Point-of-Care Ultrasonography by Pediatric Emergency Medicine Physicians

Reaffirmed June 2019

Approved February 2015 by the Society of Academic Emergency Medicine and the World Interactive Network Focused on Critical Ultrasound

Approved January 2015 by the American Academy of Pediatrics

Originally approved October 2014

A joint policy statement by the American College of Emergency Physicians, the American Academy of Pediatrics, the Society of Academic Emergency Medicine, and World Interactive Network Focused on Critical Ultrasound

ABSTRACT. Point-of-care ultrasonography is increasingly being used to facilitate accurate and timely diagnoses and to guide procedures. It is important for pediatric emergency medicine physicians caring for patients in the emergency department to receive adequate and continued point-of-care ultrasonography training for those indications used in their practice setting. Emergency departments should have credentialing and quality assurance programs. Pediatric emergency medicine fellowships should provide appropriate training to physician trainees. Hospitals should provide privileges to physicians who demonstrate competency in point-of-care ultrasonography. Ongoing research will provide the necessary measures to define the optimal training and competency assessment standards. Requirements for credentialing and hospital privileges will vary and will be specific to individual departments and hospitals.

Key words: ultrasound, ultrasonography, point of care, emergency department, imaging.

ABBREVIATIONS: US, ultrasonography; ED, emergency department; ACEP, American College of Emergency Physicians; PEM, pediatric emergency medicine; CT, computed tomography.

Point-of-care ultrasonography (US) is a focused ultrasonography performed and interpreted at the patient's bedside by a health care provider in conjunction with his/her clinical examination. Point-of-care US can expedite clinical decision making, direct follow-up diagnostic imaging, aid in procedural guidance and improve patient satisfaction.[1-6] Point-of-care US is focused to answer specific yes/no questions in real-time. The point-of-care US examination has important qualities as an imaging modality. There is no need to transport a patient outside of the emergency department (ED), examinations can be performed at all hours, examinations may be repeated,

and there is no ionizing radiation exposure. Moreover, it may help direct further evaluation so as to avoid unnecessary and costly testing.

Clinician-performed US has been used and accepted since the 1960s, when obstetricians and cardiologists first adopted the technology. Use of US by those specialists is endorsed by various professional radiology organizations.[7,8] At present, nonphysician providers, such as nurses and prehospital care workers, are also using point-of-care US as a part of their practice.[9-17]

HISTORY OF EMERGENCY PHYSICIAN POINT-OF-CARE ULTRASONOGRAPHY

In 1990, the American College of Emergency Physicians (ACEP) published a position statement supporting the performance of US by appropriately trained emergency physicians.[18] The next year, the Society of Academic Emergency Medicine endorsed that statement and called for a training curriculum, which Mateer and colleagues published in 1994.[19] By 1996, the published emergency medicine core content included point-of-care US for residency graduates.[20] With the passage of the American Medical Association Resolution 802 and policy H-230.960 in 1999 "recommending hospital [privileging] committees recognize specialty-specific guidelines for US credentialing decisions," [21,22] emergency physicians were given full responsibility for developing the guidelines of their field. By 2001, the Accreditation Council for Graduate Medical Education mandated that all emergency medicine residents attain competency in the use of point-of-care US, and the ACEP published the first emergency ultrasonography guidelines.[23] In 2008, the ACEP published an update to the original guidelines,[24] thereby establishing the most comprehensive specialty-specific training and practice to date.[25] Subsequently, the Society of Academic Emergency Medicine, the Council of Emergency Medicine Residency Directors, and the American Institute of Ultrasound in Medicine officially recognized that document.[26, 27] Currently, guidelines from the Council of Emergency Medicine Residency Directors consensus documents from 2009 and 2012 are a mainstay for residency education.[26, 28] In addition, competency assessment tools for the evaluation of emergency medicine residents are being considered.[26]

POINT-OF-CARE ULTRASONOGRAPHY IN PEDIATRIC EMERGENCY MEDICINE

More recently, pediatric emergency medicine (PEM) physicians have been using point-of-care US for patient care. According to a survey from 2011, 95% of EDs with a pediatric emergency medicine fellowship program utilize point-of-care US in some manner, and 88% of programs provide training in point-of-care US for their fellows.[29] This is a dramatic increase, as only 57% of programs reported the use of point-of-care US in 2006 and only 65% at that time incorporated training for their fellows.30 Despite the growing use of point-of-care US by pediatric emergency physicians, there have been no published guidelines specific to pediatric emergency providers. The indications set forth in existing policy statements are written for emergency physicians who predominantly care for adult patients.

MINIMIZING RADIATION EXPOSURE

One of the appealing aspects of US is its inherent safety. It relies on sound waves and not x-rays to generate images. In many instances, computed tomography (CT) imaging or radiography are the optimal diagnostic modalities in the evaluation of the pediatric patient; however, there is an increasingly large body of literature emphasizing and delineating the risks of ionizing radiation, particularly from CT.[31-44] Pediatric patients are particularly sensitive to ionizing radiation, given the larger organ-specific dosing they receive with each study, the increased susceptibility of these organs to radiation-induced cancer, and the increased lifespan over which children may develop radiation-induced cancers.[34] In response to this risk, several national campaigns have been initiated to reduce the use of unnecessary CT imaging in pediatric patients. These include efforts by the Society for Pediatric Radiology,[45] the National Council on Radiation Protection and Measurements,[46] the Food and Drug Administration,[47] and the National Cancer Institute.[48] In summary, when imaging is indicated, practitioners should attempt to optimize the use of nonradiating diagnostic modalities, such as US.

INDICATIONS FOR POINT-OF-CARE ULTRASONOGRAPHY

Pediatric emergency medicine physicians can use point-of-care US as a diagnostic or procedural adjunct in the evaluation of patients in the ED. Diagnostic applications are those that assist in diagnosis and inform medical decision-making. Procedural applications may be "US-assisted" or "static," or "US-guided," also referred to as "dynamic." Static US is defined as using US prior to the procedure, identifying anatomic structures, and determining the ideal circumstances for the procedure to be performed. The procedure itself is performed without the use of US. In contrast, in dynamic US, the US and procedure are performed simultaneously.

Clinical applications will be practice-specific and based on the patient population, incidence of disease, and the availability of resources, such as 24-hour attending radiologist coverage, availability of US technicians, and distance/transfer times to facilities that can provide US imaging. ED leaders should determine which point-of-care US examinations will be most useful to their practice environments. Physicians would then apply for institutional privileges in those specific areas. There will be a natural transition period for physicians who did not receive point-of-care US education as part of their graduate medical training. Therefore, the indications for which clinicians use point-of-care US will evolve over time as the education is disseminated throughout the PEM community. Finally, clinicians should be aware that point-of-care US is better used as a "rule-in" and not a "rule-out" diagnostic modality. The absence of an abnormal finding should not indicate a normal examination. For example, nonvisualization of an intussusception with high clinical concern must prompt further evaluation. Likewise, when findings other than those sought to "rule in" a diagnosis are encountered, a more complete imaging evaluation is warranted.

POINT-OF-CARE ULTRASONOGRAPHY TRAINING, CREDENTIALING, AND PRIVILEGING

Prior to implementing a program in the ED, departmental leaders should identify a core group of individuals with expertise in point-of-care US. This group is responsible for educating faculty and trainees as well as managing administrative tasks, such as outlining credentialing pathways and performing quality assurance image reviews. Standardized and universally accepted criteria for what designates a point-of-care expert are likely to evolve over time as advanced training programs are established. In departments or divisions without point-of care US-trained individuals, departmental leadership should consider sending an individual or group of individuals with interest to receive additional training in point-of-care US. Alternatively, an expert from another department (eg, general emergency medicine, radiology) may assume these responsibilities and work collaboratively with ED leaders.

Point-of-care US training varies depending on the practitioner's prior education and practice environment. Until now, most PEM physicians have received little or no point-of-care US instruction as part of their training. It is important that PEM fellowship programs provide adequate training including measurements of competency for trainees. Point-of-care US education is now an American Board of Pediatrics requirement for Pediatric Emergency Medicine fellowship programs.[49] Consensus education guidelines and a model curriculum were recently published.[50] There are 2 training pathways for physicians: a "training-based" pathway for current trainees, and a "practice-based" pathway for faculty without prior experience. The details of such pathways are outlined in the accompanying technical report.[51]

Prior to performing a point-of-care US examination for medical decision-making, PEM physicians must demonstrate application-specific competency. During this "training" phase, the point-of-care US expert should review all US examinations within a timely manner. Practitioners can receive relevant feedback regarding their examinations. In addition, novice practitioners should be supervised at the bedside in order to ensure that the examinations are being performed correctly. Examination reviews and bedside supervision may be performed by a department or division "expert" or by another physician already credentialed to perform US for that indication. These educational scans should not be utilized for medical decision-making and this should be clearly communicated to patients and their families.

Given that a point-of-care US examination is intended to be a focused examination, training requirements necessarily differ from those set forth by other specialty organizations, such as the American College of Radiology and other specialty organizations. A similar distinction was made in the 2002 training guidelines adopted by the American Society of Echocardiography, which outlined basic training requirements for anesthesiologists performing perioperative echocardiography, which differed from the more rigorous training needed for more consultative cardiology-performed echocardiography.[52] Competency and subsequent credentialing within a division or department may be achieved after performing a specified number, or range, of accurately performed and interpreted point-of-care US examinations. With the lack of robust data supporting a specified number of examinations per indication, some guidelines suggest 25 to 50 examinations needed to achieve competency.[25] However, physicians should not interpret this recommendation as a "one-size-fits–all" approach, as examinations vary in difficulty and, therefore, may require more experience to establish competency. In addition, the number of examinations performed may not always best define competency. As point-of-care US incorporates both cognitive and psychomotor components, individual physicians may gain competency at varying rates that may be independent of a predetermined numerical goal and better assessed through simulation, observed structured clinical examinations, or direct observation during clinical shifts.

Hospital privileging committees should provide an opportunity for privileging in specific pediatric point-of-care US examinations. Written requirements for privileging should be delineated. Building on the recommendations set forth by the ACEP, when a physician applies for appointment or reappointment to the medical staff and for clinical privileges, the process should include assessment of current competency by the point-of-care US director.[25] Because point-of-care US is a relatively new technology for PEM physicians, some specialists and hospital privileging committees may not be familiar with the precedent already set forth for point-of-care US and the benefits to patient care. Therefore, PEM physicians should educate those who are unfamiliar with its use, citing the established literature attesting to emergency physicians' ability to accurately perform and interpret point-of-care US examinations.[5, 53-116] Additionally, emergency PEM physicians should consider collaboration with radiologists and expert sonographers when implementing point-of-care US into their ED.

POINT-OF-CARE ULTRASONOGRAPHY DOCUMENTATION

Once PEM physicians are credentialed to perform point-of-care US for a particular application, they can integrate the point-of-care US examination into patient care. Details of the point-of-care US examination must be documented at the time of performance in the medical record. Specifically, documentation should include the indication for the examination, structures/organs identified, and the interpretation.[117] If the study is inadequate, this should also be noted. Images should be archived, ideally electronically, and entered as part of the electronic health record, for ease of retrieval and review.

RECOMMENDATIONS

1. Pediatric emergency medicine physicians should be familiar with the definition and application of point-of-care US and the utility for patients in the ED.
2. Pediatric emergency physicians who integrate point-of-care US in their patient care should be competent in point-of-care examinations that are specific and relevant to their clinical environment.
3. For EDs with a pediatric emergency medicine point-of-care US program, there must be a process in place for educating and assessing practitioner skill, maintaining quality assurance, and acquiring and maintaining hospital privileges.
4. Pediatric emergency medicine fellowship programs should have a structured point-of-care US education curriculum and competency assessment for fellows in training.

SUMMARY

There is an increasing demand for PEM physicians to become adept in point-of-care US. Mounting evidence supports the benefits to pediatric patients. This policy statement and accompanying technical

report have been developed to define a structured and safe program for the integration and implementation of point-of-care US by PEM physicians.

PEDIATRIC POINT-OF-CARE ULTRASOUND WORK GROUP
Jennifer R. Marin, MD, MSc, Chairperson, Lead Author
Resa E. Lewiss, MD, Lead Author
Alyssa M. Abo, MD
Stephanie J. Doniger, MD, RDMS
Jason W. Fischer, MD, MSc
David O. Kessler, MD, MSc, RDMS
Jason A. Levy, MD, RDMS
Vicki E. Noble, MD, RDMS
Adam B. Sivitz, MD
James W. Tsung, MD, MPH
Rebecca L. Vieira, MD, RDMS

AMERICAN ACADEMY OF PEDIATRICS, COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 2013-2014
Joan E. Shook, MD, MBA, FAAP, Chairperson
Alice D. Ackerman, MD, MBA, FAAP
Thomas H. Chun, MD, MPH, FAAP
Gregory P. Conners, MD, MPH, MBA, FAAP
Nanette C. Dudley, MD, FAAP
Susan M. Fuchs, MD, FAAP
Marc H. Gorelick, MD, MSCE, FAAP
Natalie E. Lane, MD, FAAP
Brian R. Moore, MD, FAAP
Joseph L. Wright, MD, MPH, FAAP

LIAISONS
Lee Benjamin, MD – American College of Emergency Physicians
Kim Bullock, MD – American Academy of Family Physicians

Elizabeth L. Robbins, MD, FAAP – AAP Section on Hospital Medicine
Toni K. Gross, MD, MPH, FAAP – National Association of EMS Physicians
Elizabeth Edgerton, MD, MPH, FAAP – Maternal and Child Health Bureau
Tamar Magarik Haro – AAP Department of Federal Affairs
Angela Mickalide, PhD, MCHES – EMSC National Resource Center
Cynthia Wright, MSN, RNC – National Association of State EMS Officials
Lou E. Romig, MD, FAAP – National Association of Emergency Medical Technicians
Sally K. Snow, RN, BSN, CPEN, FAEN – Emergency Nurses Association
David W. Tuggle, MD, FAAP – American College of Surgeons

STAFF
Sue Tellez

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS, PEDIATRIC EMERGENCY MEDICINE COMMITTEE, 2013-2014
Lee S. Benjamin, MD, FACEP, Chairperson
Isabel A. Barata, MD, FACEP, FAAP
Kiyetta Alade, MD
Joseph Arms, MD
Jahn T. Avarello, MD, FACEP
Steven Baldwin, MD
Kathleen Brown, MD, FACEP
Richard M. Cantor, MD, FACEP
Ariel Cohen, MD
Ann Marie Dietrich, MD, FACEP
Paul J. Eakin, MD
Marianne Gausche-Hill, MD, FACEP, FAAP
Michael Gerardi, MD, FACEP, FAAP
Charles J. Graham, MD, FACEP
Doug K. Holtzman, MD, FACEP
Jeffrey Hom, MD, FACEP
Paul Ishimine, MD, FACEP
Hasmig Jinivizian, MD
Madeline Joseph, MD, FACEP
Sanjay Mehta, MD, Med, FACEP
Aderonke Ojo, MD, MBBS
Audrey Z. Paul, MD, PhD
Denis R. Pauze, MD, FACEP
Nadia M. Pearson, DO
Brett Rosen, MD
W. Scott Russell, MD, FACEP
Mohsen Saidinejad, MD
Harold A. Sloas, DO
Gerald R. Schwartz, MD, FACEP
Orel Swenson, MD
Jonathan H. Valente, MD, FACEP
Muhammad Waseem, MD, MS
Paula J. Whiteman, MD, FACEP
Dale Woolridge, MD, PhD, FACEP

FINANCIAL DISCLOSURE: None disclosed

POTENTIAL CONFLICT OF INTEREST: None disclosed

References:

1. Howard ZD, Noble VE, Marill KA, et al. Bedside Ultrasound Maximizes Patient Satisfaction. *JEM*. 2013:1–8. doi:10.1016/j.jemermed.2013.05.044.

2. Jones AE, Tayal VS, Sullivan DM, Kline JA. Randomized, controlled trial of immediate versus delayed goal-directed ultrasound to identify the cause of nontraumatic hypotension in emergency department patients*. *Critical Care medicine*. 2004;32(8):1703–1708. doi:10.1097/01.CCM.0000133017.34137.82.

3. Kirkpatrick AW, Sirois M, Ball CG, et al. The hand-held ultrasound examination for penetrating abdominal trauma. *The American Journal of Surgery*. 2004;187(5):660–665. doi:10.1016/j.amjsurg.2004.02.003.

4. Liteplo AS, Marill KA, Villen T, et al. Emergency Thoracic Ultrasound in the Differentiation of the Etiology of Shortness of Breath (ETUDES): Sonographic B-lines and N-terminal Pro-brain-type Natriuretic Peptide in Diagnosing Congestive Heart Failure. *Academic Emergency Medicine*. 2009;16(3):201–210. doi:10.1111/j.1553-2712.2008.00347.x.

5. Melniker LA, Leibner E, McKenney MG, Lopez P, Briggs WM, Mancuso CA. Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: the first sonography outcomes assessment program trial. *Ann Emerg Med*. 2006;48(3):227–235. doi:10.1016/j.annemergmed.2006.01.008.

6. Moore CL, Copel JA. Point-of-care ultrasonography. *N Engl J Med*. 2011;364(8):749–757. doi:10.1056/NEJMra0909487.

7. ACR-ACOG-AIUM Practice Guideline for the Performance of Obstetrical Ultrasound. *acrorg*. 2007:1–9. Available at: http://www.acr.org/~/media/ACR/Documents/PGTS/guidelines/US_Obstetrical.pdf. Accessed January 27, 2012.

8. Quiñones MA, Douglas PS, Foster E, et al. ACC/AHA clinical competence statement on echocardiography. *Journal of the American College of Cardiology*. 2003;41(4):687–708. doi:10.1016/S0735-1097(02)02885-1.

9. Blaivas M, Lyon M. The effect of ultrasound guidance on the perceived difficulty of emergency nurse-obtained peripheral IV access. *J Emerg Med*. 2006;31(4):407–410. doi:10.1016/j.jemermed.2006.04.014.

10. Brannam L, Blaivas M, Lyon M, Flake M. Emergency Nurses' Utilization of Ultrasound Guidance for Placement of Peripheral Intravenous Lines in Difficult-access Patients. *Acad Emerg Med*. 2004;11(12):1361–1363. doi:10.1197/j.aem.2004.08.027.

11. Chin EJ, MD CHC, BS RM, et al. A Pilot Study Examining the Viability of a Prehospital Assessment with UltraSound for Emergencies (PAUSE) Protocol. *J Emerg Med*. 2012:1–8. doi:10.1016/j.jemermed.2012.02.032.

12. Heegaard W, Hildebrandt D, Spear D, Chason K, Nelson B, Ho J. Prehospital Ultrasound by Paramedics: Results of Field Trial. *Academic Emergency Medicine*. 2010;17(6):624–630. doi:10.1111/j.1553-2712.2010.00755.x.

13. Henderson A, Andrich DE, Pietrasik ME, Higgins D, Montgomery B, Langley SEM. Outcome analysis and patient satisfaction following octant transrectal ultrasound-guided prostate biopsy: a prospective study comparing consultant urologist, specialist registrar and nurse practitioner in urology. *Prostate Cancer Prostatic Dis*. 2004;7(2):122–125. doi:10.1038/sj.pcan.4500696.

14. Henderson SO, Ahern T, Williams D, Mailhot T, Mandavia D. Emergency department ultrasound by nurse practitioners. *Journal of the American Academy of Nurse Practitioners*. 2010;22(7):352–355. doi:10.1111/j.1745-7599.2010.00518.x.

15. Iregui MG, Prentice D, Sherman G, Schallom L, Sona C, Kollef MH. Physicians' estimates of cardiac index and intravascular volume based on clinical assessment versus transesophageal Doppler measurements obtained by critical care nurses. *Am J Crit Care*. 2003;12(4):336–342.

16. Noble VE, Lamhaut L, Capp R, et al. Evaluation of a thoracic ultrasound training module for the detection of pneumothorax and pulmonary edema by prehospital physician care providers. *BMC Med Educ*. 2009;9(1):3. doi:10.1186/1472-6920-9-3.

17. Walcher F, Weinlich M, Conrad G, et al. Prehospital ultrasound imaging improves management of abdominal trauma. *Br J Surg*. 2006;93(2):238–242. doi:10.1002/bjs.5213.

18. American College of Emergency Physicians: Council Resolution on Ultrasound. ACEP News, November 1990.

19. Society for Academic Emergency Medicine. Ultrasound Position Statement. SAEM Newsletter Summer 1991.

20. Hall M, DD P, Heller M, et al. Model curriculum for physician training in emergency ultrasonography. *Ann Emerg Med*. 1994;23(1):95–102.

21. American Medical Association. House of Delegates Meeting 1999, Resolution 802, I-99.

22. American Medical Association policy H-230.960. Privileging for ultrasound imaging. Available at:

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.acep.org%2FWorkArea%2FDownloadAsset.aspx%3Fid%3D44304&ei=Hsv8U7jPI86VyAS2-YDQDw&usg=AFQjCNHO4-dCf2RLkdR8B0kGmj-UF9zhRQ&bvm=bv.73612305,d.aWw. Accessed August 26, 2014.

23. Hockberger RS, Binder LS, Graber MA, et al. The model of the clinical practice of emergency medicine. *Ann Emerg Med*. 2001;37(6):745–770. doi:10.1067/mem.2001.115495.

24. American College of Emergency Physicians. American College of Emergency Physicians. ACEP emergency ultrasound guidelines-2001. *Ann Emerg Med*. 2001;38(4):470–481.

25. ACEP policy statement: Emergency ultrasound guidelines. *Ann Emerg Med*. 2009;53(4):550–570. doi:10.1016/j.annemergmed.2008.12.013.

26. Akhtar S, Theodoro D, Gaspari R, et al. Resident training in emergency ultrasound: consensus recommendations from the 2008 Council of Emergency Medicine Residency Directors Conference. In: Vol 16 Suppl 2. 2009:S32–6. doi:10.1111/j.1553-2712.2009.00589.x.

27. AIUM officially recognizes ACEP emergency ultrasound guidelines. Available at: www.aium.org/soundWaves/article.aspx?aId=442&iId=20111117. Accessed October 19, 2012.

28. Lewiss RE, Pearl M, Nomura JT, et al. CORD-AEUS: Consensus Document for the Emergency Ultrasound Milestone Project. Burton J, ed. *Acad Emerg Med*. 2013;20(7):740–745. doi:10.1111/acem.12164.

29. Marin JR, Zuckerbraun NS, Kahn JM. Use of emergency ultrasound in United States pediatric emergency medicine fellowship programs in 2011. *Journal of Ultrasound in medicine : official journal of the American Institute of Ultrasound in Medicine*. 2012;31(9):1357–1363.

30. Ramirez-Schrempp D, Dorfman DH, Tien I, Liteplo AS. Bedside ultrasound in pediatric emergency medicine fellowship programs in the United States: little formal training. *Pediatr Emerg Care*. 2008;24(10):664–667. doi:10.1097/PEC.0b013e3181884955.

31. Pearce MS, Salotti JA, Little MP, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study. *The Lancet*. 2012:499–505. doi:10.1016/S0140-6736(12)60815-0.

32. Brenner DJ, Hall EJ. Computed tomography--an increasing source of radiation exposure. *N Engl J Med*. 2007;357(22):2277–2284. doi:10.1056/NEJMra072149.

33. Brenner D, Elliston C, Hall E, Berdon W. Estimated risks of radiation-induced fatal cancer from pediatric CT. *AJR Am J Roentgenol*. 2001;176(2):289–296.

34. Brenner DJ. Estimating cancer risks from pediatric CT: going from the qualitative to the quantitative. *Pediatr Radiol*. 2002;32(4):228–231. doi:10.1007/s00247-002-0671-1.

35. Brody AS, Frush DP, Huda W, Brent RL, American Academy of Pediatrics Section on Radiology. Radiation risk to children from computed tomography. *Pediatrics*. 2007;120(3):677–682. doi:10.1542/peds.2007-1910.

36. Callahan MJ. CT dose reduction in practice. *Pediatr Radiol*. 2011;41 Suppl 2:488–492. doi:10.1007/s00247-011-2099-y.

37. Donnelly LF. Reducing radiation dose associated with pediatric CT by decreasing unnecessary examinations. *AJR Am J Roentgenol*. 2005;184(2):655–657.

38. Fazel R, Krumholz HM, Wang Y, et al. Exposure to low-dose ionizing radiation from medical imaging procedures. *N Engl J Med*. 2009;361(9):849–857. doi:10.1056/NEJMoa0901249.

39. Fenton SJ, Hansen KW, Meyers RL, et al. CT scan and the pediatric trauma patient--are we overdoing it? *J Pediatr Surg*. 2004;39(12):1877–1881.

40. Frush DP, Donnelly LF, Rosen NS. Computed tomography and radiation risks: what pediatric health care providers should know. *Pediatrics*. 2003;112(4):951–957.

41. Hartin CW Jr, Jordan JM, Gemme S, et al. Computed tomography scanning in pediatric trauma: opportunities for performance improvement and radiation safety. *J Surg Res*. 2013;180(2):226–231. doi:10.1016/j.jss.2012.04.020.

42. Nickoloff EL, Alderson PO. Radiation exposures to patients from CT: reality, public perception, and policy. *AJR Am J Roentgenol*. 2001;177(2):285–287.

43. Rajaraman P, Simpson J, Neta G, et al. Early life exposure to diagnostic radiation and ultrasound scans and risk of childhood cancer: case-control study. *BMJ (Clinical research ed)*. 2011;342:d472.

44. Linet MS, Kim K-P, Rajaraman P. Children's exposure to diagnostic medical radiation and cancer risk: epidemiologic and dosimetric considerations. *Pediatr Radiol*. 2008;39(S1):4–26. doi:10.1007/s00247-008-1026-3.

45. Slovis TL. Conference on the ALARA (as low as reasonably achievable) concept in pediatric CT: intelligent dose reduction. Pediatr Radiol. 2002;32:217-8.

46. Linton OW, Mettler FA, National Council on Radiation Protection and Measurements. National conference on dose reduction in CT, with an emphasis on pediatric patients. *AJR Am J Roentgenol*. 2003;181(2):321–329.

47. Food and Drug Administration. FDA public health notification: reducing radiation risk from computed tomography for pediatric and small adult patients. *Pediatr Radiol*. 2002;32(4):314–316. doi:10.1007/s00247-002-0687-6.

48. National Cancer Institute. Radiation risks and pediatric computed tomography (CT): A guide for health care providers. Available at http://cancer.gov/cancerinfo/causes/radiation-risks-pediatric-ct. Accessed October 26, 2011.

49. American Board of Pediatrics Content Outline: Pediatric Emergency Medicine. 2009:1–147.

50. Vieira RL, Hsu D, Nagler J, Chen L, Gallagher R, Levy JA. Pediatric Emergency Medicine Fellow Training in Ultrasound: Consensus Educational Guidelines. Moore C, ed. *Academic Emergency Medicine*. 2013;20(3):300–306. doi:10.1111/acem.12087.

51. Marin JR, Lewiss RE; American Academy of Pediatrics, Society of Academic Emergency Medicine, American College of Emergency Physicians, World Interactive Network Focused on Critical Ultrasound. Technical report: point-of-care ultrasonography by pediatric emergency medicine physicians. *Pediatrics*. In press

52. Cahalan MK, Stewart W, Pearlman A, et al. American Society of Echocardiography and Society of Cardiovascular Anesthesiologists task force guidelines for training in perioperative echocardiography. 2002;15(6):647–652. doi:10.1067/mje.2002.123956.

53. Fox JC, Boysen M, Gharahbaghian L, et al. Test characteristics of focused assessment of sonography for trauma for clinically significant abdominal free fluid in pediatric blunt abdominal trauma. *Acad Emerg Med*. 2011;18(5):477–482. doi:10.1111/j.1553-2712.2011.01071.x.

54. Holmes JF, Gladman A, Chang CH. Performance of abdominal ultrasonography in pediatric blunt trauma patients: a meta-analysis. *J Pediatr Surg*. 2007;42(9):1588–1594. doi:10.1016/j.jpedsurg.2007.04.023.

55. Sola JE, Cheung MC, Yang R, et al. Pediatric FAST and elevated liver transaminases: An effective screening tool in blunt abdominal trauma. *J Surg Res*. 2009;157(1):103–107. doi:10.1016/j.jss.2009.03.058.

56. Squire BT, Fox JC, Anderson C. ABSCESS: applied bedside sonography for convenient evaluation of superficial soft tissue infections. *Acad Emerg Med*. 2005;12(7):601–606. doi:10.1197/j.aem.2005.01.016.

57. Tayal VS, Hasan N, Norton HJ, Tomaszewski CA. The Effect of Soft-tissue Ultrasound on the Management of Cellulitis in the Emergency Department. *Academic Emergency Medicine*. 2006;13(4):384–388. doi:10.1197/j.aem.2005.11.074.

58. Sivitz AB, Lam SHF, Ramirez-Schrempp D, Valente JH, Nagdev AD. Effect of bedside ultrasound on management of pediatric soft-tissue infection. *Journal of Emergency Medicine*. 2010;39(5):637–643. doi:10.1016/j.jemermed.2009.05.013.

59. Iverson K, Haritos D, Thomas R, Kannikeswaran N. The effect of bedside ultrasound on diagnosis and management of soft tissue infections in a pediatric ED. *American Journal of Emergency Medicine*. 2012;30(8):1347–1351. doi:10.1016/j.ajem.2011.09.020.

60. Marin JR, J DA, Bilker WB, Panebianco NL, Brown NJ, Alpern ER. Emergency Ultrasound-assisted Examination of Skin and Soft Tissue Infections in the Pediatric Emergency Department. Moore C, ed. *Acad Emerg Med*. 2013;20(6):545–553. doi:10.1111/acem.12148.

61. Friedman DI, Forti RJ, Wall SP, Crain EF. The utility of bedside ultrasound and patient perception in detecting soft tissue foreign bodies in children. *Pediatr Emerg Care*. 2005;21(8):487–492.

62. Chen L, Hsiao AL, Moore CL, Dziura JD, Santucci KA. Utility of bedside bladder ultrasound before urethral catheterization in young children. *Pediatrics*. 2005;115(1):108–111. doi:10.1542/peds.2004-0738.

63. Witt M, Baumann BM, McCans K. Bladder ultrasound increases catheterization success in pediatric patients. *Acad Emerg Med*. 2005;12(4):371–374. doi:10.1197/j.aem.2004.11.023.

64. Randazzo MR, Snoey ER, Levitt MA. Accuracy of emergency physician assessment of left ventricular ejection fracture and central venous pressure using echocardiography. *Academic Emergency Medicine*. 2003;10(9):973–977.

65. Pershad J, Myers S, Plouman C, et al. Bedside limited echocardiography by the emergency physician is accurate during evaluation of the critically ill patient. *Pediatrics*. 2004;114(6):e667–71.

doi:10.1542/peds.2004-0881.

66. Longjohn M, Wan J, Joshi V, Pershad J. Point-of-Care Echocardiography by Pediatric Emergency Physicians. *Pediatr Emerg Care*. 2011;27(8):693–696. doi:10.1097/PEC.0b013e318226c7c7.

67. Chen L, Hsiao A, Langhan M, Riera A, Santucci KA. Use of bedside ultrasound to assess degree of dehydration in children with gastroenteritis. *Acad Emerg Med*. 2010;17(10):1042–1047. doi:10.1111/j.1553-2712.2010.00873.x.

68. Chen L, Kim Y, Santucci KA. Use of ultrasound measurement of the inferior vena cava diameter as an objective tool in the assessment of children with clinical dehydration. *Acad Emerg Med*. 2007;14(10):841–845. doi:10.1197/j.aem.2007.06.040.

69. Perera P, Mailhot T, Riley D, Mandavia D. The RUSH exam: Rapid Ultrasound in SHock in the evaluation of the critically lll. *Emerg Med Clin North Am*. 2010;28(1):29–56, vii. doi:10.1016/j.emc.2009.09.010.

70. Labovitz AJ, Noble VE, Bierig M, et al. Focused cardiac ultrasound in the emergent setting: a consensus statement of the American Society of Echocardiography and American College of Emergency Physicians. In: Vol 23. 2010:1225–1230. doi:10.1016/j.echo.2010.10.005.

71. Kendall JL, Shimp RJ. Performance and interpretation of limited right upper quadrant ultrasound by emergency physicians. *J Emerg Med*. 1998;21(1):7–13.

72. Blaivas M, Harwood RA, Lambert MJ. Decreasing length of stay with emergency ultrasound examination of the gallbladder. *Academic Emergency Medicine*. 1999;6(10):1020–1023.

73. Freeman K, Dewitz A, Baker WE. Ultrasound-guided hip arthrocentesis in the ED. *Am J Emerg Med*. 2007;25(1):80–86. doi:10.1016/j.ajem.2006.08.002.

74. LaRocco BG, Zlupko G, Sierzenski P. Ultrasound diagnosis of quadriceps tendon rupture. *J Emerg Med*. 2008;35(3):293–295. doi:10.1016/j.jemermed.2007.05.015.

75. Sisson C, Nagdev A, Tirado A, Murphy M, Suner S. Ultrasound diagnosis of traumatic partial triceps tendon tear in the emergency department. *JEM*. 2011;40(4):436–438. doi:10.1016/j.jemermed.2008.03.047.

76. Weinberg ER, Tunik MG, Tsung JW. Accuracy of clinician-performed point-of-care ultrasound for the diagnosis of fractures in children and young adults. *Injury*. 2010;41(8):862–868. doi:10.1016/j.injury.2010.04.020.

77. Durston W, Swartzentruber R. Ultrasound guided reduction of pediatric forearm fractures in the ED. *Am J Emerg Med*. 2000;18(1):72–77.

78. Patel DD, Blumberg SM, Crain EF. The utility of bedside ultrasonography in identifying fractures and guiding fracture reduction in children. *Pediatr Emerg Care*. 2009;25(4):221–225.

79. Chen L, Kim Y, Moore CL. Diagnosis and guided reduction of forearm fractures in children using bedside ultrasound. *Pediatr Emerg Care*. 2007;23(8):528–531. doi:10.1097/PEC.0b013e318128f85d.

80. Cross KP, Warkentine FH, Kim IK, Gracely E, Paul RI. Bedside ultrasound diagnosis of clavicle

fractures in the pediatric emergency department. *Acad Emerg Med*. 2010;17(7):687–693. doi:10.1111/j.1553-2712.2010.00788.x.

81. Chien M, Bulloch B, Garcia-Filion P, Youssfi M, Shrader MW, Segal LS. Bedside ultrasound in the diagnosis of pediatric clavicle fractures. *Pediatr Emerg Care*. 2011;27(11):1038–1041. doi:10.1097/PEC.0b013e318235e965.

82. Chaar-Alvarez FM, Warkentine F, Cross K, Herr S, Paul RI. Bedside ultrasound diagnosis of nonangulated distal forearm fractures in the pediatric emergency department. *Pediatr Emerg Care*. 2011;27(11):1027–1032. doi:10.1097/PEC.0b013e318235e228.

83. Ramirez-Schrempp D, Vinci RJ, Liteplo AS. Bedside ultrasound in the diagnosis of skull fractures in the pediatric emergency department. *Pediatr Emerg Care*. 2011;27(4):312–314. doi:10.1097/PEC.0b013e3182131579.

84. Rabiner JE, Friedman LM, Khine H, Avner JR, Tsung JW. Accuracy of Point-of-Care Ultrasound for Diagnosis of Skull Fractures in Children. *Pediatrics*. 2013;131(6):1757–1764. doi:10.1542/peds.2012-3921.

85. Vieira RL, Levy JA. Bedside ultrasonography to identify hip effusions in pediatric patients. *Ann Emerg Med*. 2010;55(3):284–289. doi:10.1016/j.annemergmed.2009.06.527.

86. Shah VP, Tunik MG, Tsung JW. Prospective Evaluation of Point-of-Care Ultrasonography for the Diagnosis of Pneumonia in Children and Young Adults. *JAMA Pediatr*. 2013;167(2):119–125. doi:10.1001/2013.jamapediatrics.107.

87. Theodoro D, Blaivas M, Duggal S. Real-time B-mode ultrasound in the ED saves time the diagnosis of deep vein thrombosis (DVT). *Am J Emerg Med*. 2004;22(3):197–200.

88. Magazzini S, Vanni S, Toccafondi S. Duplex ultrasound in the emergency department for the diagnostic management of clinically suspected deep vein thrombosis. *Academic Emergency Medicine*. 2007;14(3):216–220.

89. Jolly BT, Massarin E, Pigman EC. Color Doppler ultrasonography by emergency physicians for the diagnosis of acute deep venous thrombosis. *Academic Emergency Medicine*. 1997;4(2):129–132.

90. Blaivas M, Theodoro D, Sierzenski PR. A study of bedside ocular ultrasonography in the emergency department. *Acad Emerg Med*. 2002;9(8):791–799.

91. Tayal VS, Neulander M, Norton HJ, Foster T, Saunders T, Blaivas M. Emergency department sonographic measurement of optic nerve sheath diameter to detect findings of increased intracranial pressure in adult head injury patients. *Ann Emerg Med*. 2007;49(4):508–514. doi:10.1016/j.annemergmed.2006.06.040.

92. Yoonessi R, Hussain A, Jang TB. Bedside ocular ultrasound for the detection of retinal detachment in the emergency department. *Acad Emerg Med*. 2010;17(9):913–917. doi:10.1111/j.1553-2712.2010.00809.x.

93. Riera A, Hsiao AL, Langhan ML, Goodman TR, Chen L. Diagnosis of intussusception by physician novice sonographers in the emergency department. *Ann Emerg Med*. 2012;60(3):264–268. doi:10.1016/j.annemergmed.2012.02.007.

94. Sivitz AB, Tejani C, Cohen SG. Evaluation of Hypertrophic Pyloric Stenosis by Pediatric Emergency Physician Sonography. Gorelick MH, ed. *Acad Emerg Med*. 2013:n/a–n/a. doi:10.1111/acem.12163.

95. Fox JC, Solley M, Anderson CL, Zlidenny A, Lahham S, Maasumi K. Prospective evaluation of emergency physician performed bedside ultrasound to detect acute appendicitis. *Eur J Emerg Med*. 2008;15(2):80–85. doi:10.1097/MEJ.0b013e328270361a.

96. McRae A, Edmonds M, Murray H. Diagnostic accuracy and clinical utility of emergency department targeted ultrasonography in the evaluation of first-trimester pelvic pain and bleeding: a systematic review. *CJEM*. 2009;11(4):355–364.

97. Blaivas M, Sierzenski P, Plecque D. Do emergency physicians save time when locating a live intrauterine pregnancy with bedside ultrasonography? *Academic Emergency Medicine*. 2000;7(9):988–993.

98. Stein JC, Wang R, Adler N. Emergency physician ultrasonography for evaluating patients at risk for ectopic pregnancy. *Ann Emerg Med*. 2010;56:674–683.

99. Randolph AG, Cook DJ, Gonzales CA, Pribble CG. Ultrasound guidance for placement of central venous catheters: a meta-analysis of the literature. *Critical Care medicine*. 1996;24(12):2053–2058.

100. Miller AH, Roth BA, Mills TJ, Woody JR, Longmoor CE, Foster B. Ultrasound guidance versus the landmark technique for the placement of central venous catheters in the emergency department. *Acad Emerg Med*. 2002;9(8):800–805.

101. Keyes LE FBSEEA. Ultrasound-Guided Brachial and Basilic Vein Cannulation in Emergency Department Patients With Difficult Intravenous Access. *Ann Emerg Med*. 1999;34:711–714.

102. Doniger SJ, Ishimine P, Fox JC, Kanegaye JT. Randomized controlled trial of ultrasound-guided peripheral intravenous catheter placement versus traditional techniques in difficult-access pediatric patients. *Pediatr Emerg Care*. 2009;25(3):154–159. doi:10.1097/PEC.0b013e31819a8946.

103. Ferre RM, Sweeney TW. Emergency physicians can easily obtain ultrasound images of anatomical landmarks relevant to lumbar puncture. *American Journal of Emergency Medicine*. 2007;25(3):291–296. doi:10.1016/j.ajem.2006.08.013.

104. Nomura JT, Leech SJ, Shenbagamurthi S, et al. A randomized controlled trial of ultrasound-assisted lumbar puncture. *Journal of Ultrasound in medicine : official journal of the American Institute of Ultrasound in Medicine*. 2007;26(10):1341–1348.

105. Liebmann O, Price D, Mills C, et al. Feasibility of forearm ultrasonography-guided nerve blocks of the radial, ulnar, and median nerves for hand procedures in the emergency department. *Ann Emerg Med*. 2006;48(5):558–562. doi:10.1016/j.annemergmed.2006.04.014.

106. Stone MB, Wang R, Price DD. Ultrasound-guided supraclavicular brachial plexus nerve block vs procedural sedation for the treatment of upper extremity emergencies. *Am J Emerg Med*. 2008;26(6):706–710. doi:10.1016/j.ajem.2007.09.011.

107. Shiver S, Blaivas M, Lyon M. A Prospective Comparison of Ultrasound-guided and Blindly Placed Radial Arterial Catheters. *Academic Emergency Medicine*. 2006;13(12):1275–1279. doi:10.1197/j.aem.2006.07.015.

108. D P, Brunette D, Asinger R, Ruiz E. Emergency department echocardiography improves outcome in penetrating cardiac injury. *Ann Emerg Med*. 1992;21(6):709–712.

109. Gaspari RJ. Emergency Ultrasound and Urinalysis in the Evaluation of Flank Pain. *Acad Emerg Med*. 2005;12(12):1180–1184. doi:10.1197/j.aem.2005.06.023.

110. Watkins S, Bowra J, Sharma P, Holdgate A, Giles A, Campbell L. Validation of emergency physician ultrasound in diagnosing hydronephrosis in ureteric colic. *Emergency Medicine Australasia*. 2007;19(3):188–195. doi:10.1111/j.1742-6723.2007.00925.x.

111. Burnside PR, Brown MD, Kline JA. Systematic Review of Emergency Physician–performed Ultrasonography for Lower-Extremity Deep Vein Thrombosis. *Academic Emergency Medicine*. 2008;15(6):493–498. doi:10.1111/j.1553-2712.2008.00101.x.

112. Adhikari S, Blaivas M, Lyon M. Diagnosis and management of ectopic pregnancy using bedside transvaginal ultrasonography in the ED: a 2-year experience. *Am J Emerg Med*. 2007;25(6):591–596. doi:10.1016/j.ajem.2006.11.020.

113. Adhikari S, Blaivas M, Lyon M. Role of Bedside Transvaginal Ultrasonography in the Diagnosis of Tubo-ovarian Abscess in the Emergency Department. *J Emerg Med*. 2008;34(4):429–433. doi:10.1016/j.jemermed.2007.05.057.

114. Blaivas M, Sierzenski P, Lambert M. Emergency evaluation of patients presenting with acute scrotum using bedside ultrasonography. *Acad Emerg Med*. 2001;8(1):90–93.

115. Nazeer SR, Dewbre H, Miller AH. Ultrasound-assisted paracentesis performed by emergency physicians vs the traditional technique: a prospective, randomized study. *Am J Emerg Med*. 2005;23(3):363–367. doi:10.1016/j.ajem.2004.11.001.

116. Wiler JL, Costantino TG, Filippone L, Satz W. Ultrasound in Emergency Medicine. *JEM*. 2010;39(1):76–82. doi:10.1016/j.jemermed.2008.05.012.

117. Resnick J, Hoffenberg S, Tayal V, Dickman E. Ultrasound coding and reimbursement update 2009. Emergency Ultrasound Section. American College of Emergency Physicians. Available at: http://www.acep.org/content.aspx?id=32182. Accessed March 26, 2013.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved August 2022

Prehospital Hemorrhage Control and Treatment by Clinicians: A Joint Position Statement

Revised August 2022

Originally approved March 2022

A joint policy statement of the American College of Emergency Physicians (ACEP), the American College of Surgeons Committee on Trauma (ACS-COT), the National Association of EMS Physicians (NAEMSP) and the National Association of EMTs (NAEMT)

Available online at
https://www.annemergmed.com/article/S0196-0644(23)00209-3/fulltext

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Prescription Drug Pricing

Originally approved June 2018

The American College of Emergency Physicians (ACEP) believes that rising drug prices threaten the health and financial well-being of the patients served by its members. In addition, the high cost of pharmaceutical agents leads to patient non-adherence, avoidable return visits to the emergency department and admissions to the hospital, increased days missed from school and/or work, as well as poor patient and provider satisfaction. Furthermore, ACEP believes:

- Value-based pharmaceutical pricing is a promising strategy to ensure that the benefits of a given drug are commensurate with the price charged.

- The current law that prohibits Medicare from negotiating drug prices with manufacturers should be repealed or amended to support drug price negotiation as a strategy to reduce healthcare costs for patients and insurers. At a minimum, Medicare Part D beneficiaries should be able to share directly in the savings from discounts negotiated by Part D plans by requiring such plans to apply a portion of the total rebates and price concessions at the point-of-sale.

- Electronic health record vendors and health systems should support the integration of drug price information that is accessible to clinicians at the point-of-care, when available. This should include pricing for both hospital-administered and prescribed medications and should provide decision-support tools to suggest equally effective alternatives when quality evidence exists to inform such decisions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Prevention of Harm from Internet and Social Media Challenges

Originally approved October 2020

Replicating potentially dangerous internet or social media challenges may cause injury, poisoning, and other harm. Engaging in this high-risk behavior can lead to needless suffering, disability, and death, and places additional strain on the emergency healthcare system. The American College of Emergency Physicians (ACEP) believes that prevention of this behavior is an important public health objective and recommends the following actions to help reduce harm from internet and social media challenges:

- Emergency physicians should track atypical injury and illness patterns and identify trends that may indicate harm from an internet or social media challenge.
- Emergency physicians should stay abreast of evolving social media challenges and remain prepared to respond and notify local public health departments if patterns arise.
- As the leader in emergency care, ACEP and emergency physicians should respond to the public, when needed, to correct harmful misinformation posted on internet or social media sites.
- Public health professionals should survey injury patterns, especially clusters of atypical injuries, and alert the public about the dangers of internet and social media challenges.
- Distributors of internet and social media content should monitor their sites for potentially dangerous material and flag dangerous content with public health guidance or consider removal if patterns of harm occur.
- Parents, guardians, coaches, and teachers should observe minors for potentially dangerous or abnormal behavior and communicate with medical and public health professionals about high-risk behavior patterns.
- Government and academic institutions should support timely research into developing trends in injury and illness related to internet and social media challenges.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Prior Authorization

Revised June 2023, April 2017, April 2010, February 2003

Approved as a policy statement October 1998

Originally approved as CR025 November 1987

The American College of Emergency Physicians (ACEP) affirms the principle that patients should receive prompt EMTALA-mandated emergency care regardless of payment source or ability to pay.

Under EMTALA, emergency medicine physicians have a federal mandate obligating them to see all patients presenting to the emergency department (ED) and provide a medical screening exam (MSE) to evaluate and stabilize any patient presenting to the ED. The Prudent Layperson Standard clearly states that all patients who feel they may have an emergency medical condition (including pain) are afforded a thorough and complete MSE, treatment, and stabilization in the ED. Often times, the MSE requires cognitive skills, laboratory, and diagnostic testing concomitant with patient care. Pre-authorization would be an obvious barrier to expeditious care and cannot be utilized in the ED while a patient is undergoing an MSE.

ACEP further asserts that prior authorization rules instituted by third party payers must not pose a barrier to patients seeking access to timely emergency care, and that an insured patient should be granted the expectation of coverage when seeking emergency care. ACEP further asserts that insurance companies have an obligation to pay for necessary evaluation, stabilizing treatments, and/or appropriate consultation, admission, or transfer.

Insurance coverage does not affect the obligation of the physician to perform a MSE and provide necessary stabilizing treatment or appropriate transfer, nor the financial obligation incurred for such evaluation and care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2024

Prioritization of Resident Education in Procedures

Originated approved March 2024

Procedural education and experience are fundamental to the training of emergency medicine residents. The American Council for Graduate Medical Education(ACGME) requires residents to perform a minimum number of key procedures to complete their training. To promote high-quality care, and ensure patient safety, American College of Emergency Physicians (ACEP) believes that emergency medicine resident physicians must have the right of first refusal over nonphysicians, such as physician assistants and nurse practitioners, for ACGME-required procedures performed in emergency departments. In addition, ACEP supports the prioritization of resident procedural education in all areas where training occurs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Procedural Sedation in the Emergency Department

Reaffirmed February 2023

Revised with current title June 2017

Revised January 2011 titled "Sedation in the Emergency Department", replacing two rescinded policy statements "Procedural Sedation in the Emergency Department" (approved October 2004) and "The Use of Pediatric Sedation and Analgesia" (revised April 2008, reaffirmed October 2001, revised January 1997, originally approved March 1992)

A joint policy statement of the American College of Emergency Physicians and the Emergency Nurses Association

Procedural sedation is a technique of administering sedatives or dissociative agents with or without analgesics to induce a state that allows the patient to tolerate unpleasant procedures. Procedural sedation improves the quality and safety of patient care by decreasing the length of time necessary to perform a procedure, increasing the likelihood of success, and reducing risk of injury to the patient or health care worker due to uncontrolled movements.

Procedural sedation encompasses a continuum of altered levels of consciousness (including minimal, moderate, and deep), and dissociative sedation.

Procedural sedation is a critically important component of comprehensive emergency care and a required core competency of emergency medicine residency training. This training includes rescue airway interventions for support of patient ventilation and oxygenation, as well as support and monitoring of patient cardiovascular status.

Evidence in the medical literature has established that procedural sedation, including minimal, moderate, deep, and dissociative sedation, can be safely and effectively performed in the emergency department (ED) by emergency physicians, both in the care of adult and pediatric emergency populations.

There is no single agent or combination of agents that can be recommended for every patient or sedation procedure. Clinicians must weigh the relative needs for pain control (analgesia), sedation, and the potential risks, benefits, and alternatives when individualizing their plan for patient sedation.

Agents commonly used for sedation of patients in the ED include, but are not limited to, opioids, benzodiazepines, and barbiturates as well as other specific agents such as ketamine, propofol, remifentanil, alfentanil, dexmedetomidine, etomidate, and nitrous oxide.

In addition to pharmacologic agents, adjunctive techniques, such as regional, local, and topical anesthesia, and nonpharmacologic techniques should be used as needed to reduce patients' fear, discomfort, and anxiety.

Nothing by mouth (NPO) status has not been demonstrated to reduce risk of emesis or aspiration in ED procedural sedation.

The American College of Emergency Physicians is the authoritative body for the establishment of guidelines for sedation of patients in the ED. To promote the safe and effective use of sedation in ED patients, the American College of Emergency Physicians recommends the following:

- Emergency physicians who have received the appropriate training and skills necessary to safely provide procedural sedation, such as board certification (ABEM/ABOEM) in emergency medicine or graduates of an ACGME accredited emergency medicine program, should be credentialed without additional requirements for procedural sedation.

- The decision to provide sedation and the selection of the specific pharmacologic agents should be individualized for each patient by the emergency physician and should not be otherwise restricted.

- Emergency physicians and staff are expected to be familiar with the pharmaceutical agents they use and be prepared to manage their potential complications.

- To minimize complications, the appropriate drugs and dosages must be chosen and administered in an appropriately monitored setting. Patient evaluation should be performed before, during, and after their use.

- Institutional and departmental guidelines related to the sedation of patients should include the selection and preparation of patients, informed consent, equipment and monitoring requirements, hospital staff training and competency verification, criteria for discharge, and continuous quality improvement.

- ED physician and nursing leadership should have ongoing collaboration to develop institutional policy regarding nursing roles in sedation and the ability of nurses to administer sedatives. Emergency nurses with demonstrated competencies are qualified and capable to safely administer propofol, ketamine, and other sedatives.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Protecting Emergency Physician Compensation During Contract Transitions

Originally approved February 2020

It is the position of the American College of Emergency Physicians that emergency physicians who provide services to patients during a time of contract transitions should be fully compensated for their professional efforts without delay, barrier, or requirement to continue employment with a specific party. This compensation should include monetary compensation as well as uninterrupted provision of benefits and malpractice coverage. Parties involved in contract transitions, including contract management groups and the hospitals and health systems involved, have a responsibility to meet these obligations immediately and not use such a transition as leverage in the contract process.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Protection from Violence and the Threat of Violence in the Emergency Department

Revised June 2022 with current title, April 2016 titled "Protection from Violence in the Emergency Department," June 2011, April 2008 titled "Protection from Physical Violence in the Emergency Department Environment."

Reaffirmed October 2001, October 1997

Originally approved titled "Protection from Physical Violence in the Emergency Department" January 1993

The American College of Emergency Physicians (ACEP) believes that workplace violence is a preventable and significant public health problem, and that optimal patient care can be achieved only when patients, health care workers, and all other persons in the emergency department (ED) are protected against violent acts occurring within the department. Workplace violence is a preventable and significant public health problem and optimal patient care can be achieved only when patients, health care workers, and all other persons in the emergency department (ED) are protected against violent acts occurring within the department. There are concrete steps emergency physicians (EPs) can take to advocate for safer work conditions in the ED as hospitals are not considered a federal gun free zone and concealed weapon provisions vary among states. To ensure the safety and security of the ED environment, the hospital and its administrators have the following responsibilities:

- Provide an ED security system based upon ongoing institution-specific risk assessment that may include signage, adequate security personnel, timely personnel training, physical barriers, surveillance equipment, and other security components.
- Erect signage and provide for appropriate securing of firearms outside of the ED, designating the ED a 'Firearm Free Zone.'
- Coordinate the healthcare institution's security system with local law enforcement agencies when developing policies for safekeeping of firearms; trained and on-duty law enforcement officers, hospital security, military police and federal agents may be acceptable exceptions to the 'Firearm-Free Zone.'
- Individual healthcare institutions must address workforce safety as a priority on their property while maintaining every patient's healthcare rights.
- Develop written ED protocols with input from staff and the community which is served for violent situations occurring in the ED to ensure the safety of patients, visitors, and health care workers alike.
- Provide institutional and public-facing education and support academic research to decrease workplace violence, including firearm-related morbidity and mortality.

- Promote a culture of safety by promoting continuous and open reporting of safety concerns by staff and visitors. The "see something, say something" approach works best with receptive leadership.
- Protect and support physicians who take personal safety precautions to prevent harm and who raise safety concerns
- Develop and enforce a mandatory reporting policy that requires employees to promptly report any verbal assault or physical battery. Such policies should clearly state that reporting will not result in any adverse action by the hospital such as termination, threatening to terminate, demoting, suspending, or in any manner discriminating against an employee who reports any assault or battery.
- Adopt a zero-tolerance policy for employees, patients, families, and visitors that states that any violence in the ED is not acceptable. This should include a process to safely treat, or, if indicated, discharge patients who threaten or commit acts of violence toward ED staff. Educate employees that assault and battery is not "part of the job."
- Provide appropriate post-incident support for employees involved in violent events including prompt medical treatment, debriefing, counseling, and employee assistance.
- Educate staff through formal, regular training of early recognition of individuals with potential to become violent, techniques for de-escalation, non-violent crises intervention, and importance of seeking assistance.
- Pursue maximum criminal prosecution, when deemed appropriate, against those individuals who threaten and commit violent acts against health care workers. Additionally, ACEP recognizes that the EMS system is an integral component of emergency care and supports and encourages efforts to protect EMS personnel against physical violence in the prehospital environment.

Additionally, ACEP recognizes that the EMS system is an integral component of emergency care and supports and encourages efforts to protect EMS personnel against physical violence in the prehospital environment.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Protection of Physicians and Other Health Care Professionals from Criminal Liability for Medical Care Provided

Originally approved June 2022

The American College of Emergency Physicians (ACEP) supports protection from inappropriate application of criminal liability for medical care provided by physicians and other health care professionals in good faith, absent of criminal intent. Certainly, there is precedent for potential civil liability in alleged substandard medical care events. However, the imposition of criminal liability for adverse outcomes related to medical care provided in good faith, absent of criminal intent, is without precedent until recently. We object to the disproportionate application of criminal law statutes and prosecutorial discretion that would adversely impact and influence the provision of medical care.

As with any potential medical misadventure, although there is often focus on individual performance, the system-based issues can have an even greater influence on patient care outcomes. Therefore, medical institutions and organized health systems bear responsibility, as well, for potential adverse patient care adverse events.

This responsibility should manifest as ensuring proper resources - specifically safe work conditions, adequate staffing, proper education with training, advanced technology, ability to report and analyze error without retribution, and flexible, scalable resource allotment. That adverse care events may be influenced by circumstances outside of individual control should be acknowledged, as part of the judicial process.

The legal system and legislatures should recognize that the introduction of inappropriate or disproportionate use of criminal law statutes as they apply to medical adverse events or errors has the potential to adversely impact future disclosure in the culture of safety, as well as other adverse impacts such as bias against caring for patients at any risk of complications or bad outcomes thus making it more likely that such patients will be sent more often to emergency departments, even when this is not necessary.

Recommendations

As a means of ensuring a safe and effective patient care process and proper accountability for potential error, ACEP believes:

Medical Issues

- An established culture of safety requires the ability to disclose, analyze and improve subsequent medical care if an adverse event or error is encountered, including error with harm resulting, harmless errors, and near miss events.
- Quality improvement efforts focus on peer protection and blame free disclosure to improve future processes, which would be hindered by the specter of criminal liability for routine patient care events.
- The interface between human intervention and automation advancement should be tailored to the individual institution, have the ability to adapt to unique patient care events, and utilize end-user feedback to improve the product or system.
- There should be a focus on certification, training, and continuing education when utilizing patient care assistive technology.
- Institution based physicians and other health care professionals should be able to rely on the integrity of institutional endorsed patient safeguards, automation, and alarm or warning systems.
- This system utilizing patient care technology should acknowledge the well validated adverse impact of "alarm fatigue" occurring in acute care settings, and develop a vendor partnered system to deliver only valid and appropriate warning alerts.
- Institutional based physicians and other health care professionals should trust that their institution supports and is committed to a safe working environment with adequate staffing, systems, technology, and flexibility to accomplish the patient care mission.

Legal Issues

- A basic premise of jurisprudence is the right to be judged by a group of one's peers. Obviously, a criminal proceeding forgoes a peer review and expert panel medical standards evaluation. We endorse the latter as being necessary to a reliable professional liability analysis.
- Any health care professional should be able to rely on their medical institution to protect them from inappropriate or disproportionate criminal liability for good faith provision of patient care events absent of criminal intent.
- In general, a crime involves three crucial elements: act or conduct, mental state, and proximate causation to the defined event. Each specific defining element must be proven independently to be appropriately charged under a criminal statute.
- Historic descriptions of unlawful killing, such as criminal homicide, murder, manslaughter, and negligent homicide are not well adapted to medical situations.[1]
- Criminal negligence requires that one be aware of a substantial and justifiable risk and that such risk is ignored resulting in a gross deviation from the accepted standard of care.[2]
- Reckless homicide requires that the reckless conduct, defined as being aware of significant and unjustifiable risk, purposely disregarded that risk that resulted in patient death.[3]
- Every physician and health care professional should be able to rely on their institution to provide capable legal counsel, resources, and support when criminal negligence is alleged and for liability related to institutional responsibility.[2]

References

1. Model Penal Code § 210.1-4.
2. Tennessee Code Title 39-Criminal Offenses Chapter 13-Offenses Against Person § 39-11-106. Criminal Negligence.
3. Tennessee Code Title 39-Criminal Offenses Chapter 13-Offenses Against Person § 39-13-215. Reckless Homicide.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Providers of Unsupervised Emergency Department Care

Reaffirmed January 2019

Revised June 2013

Reaffirmed October 2007

Originally approved June 2001

The American College of Emergency Physicians (ACEP) endorses the 2000 position statement of the Society for Academic Emergency Medicine (SAEM) on the "Qualifications for Unsupervised Emergency Department Care," and believes that the independent practice of emergency medicine is best performed by specialists who have completed American Board of Emergency Medicine (ABEM) or American Osteopathic Board of Emergency Medicine (AOBEM) certification, or have successfully "completed an Accreditation Council for Graduate Medical Education (ACGME) or American Osteopathic Association (AOA) accredited emergency medicine residency, and is in the process of completing ABEM or AOBEM examinations."[1]

"Residents-in-training or other physicians who do not meet these criteria are less likely to possess the cognitive and technical skill set necessary for rendering unsupervised care for the tremendous breadth and acuity of situations encountered in an ED."[1]

ACEP believes that advanced practice registered nurses or physician assistants should not provide unsupervised emergency department care.

ACEP believes that "unsupervised ED practice is best provided by fully trained emergency medicine specialists."[1]

[1] SAEM Position Statement on the Qualifications for Unsupervised Emergency Department Care. *Acad Emerg Med.* 2000;7:929

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Providing Telephone Advice from the Emergency Department

Revised January 2019, February 2013

Reaffirmed October 2006

Revised July 2000, August 1995

Originally approved September 1989

Emergency departments (EDs) often receive telephone calls from the public seeking medical advice. The focus of the ED is providing care for patients in the department and ACEP recommends that EDs do not attempt medical assessment or management by telephone. EDs should have a process for responding to calls from the public to help direct the public to timely access to appropriate care. ACEP encourages EDs to work with regional support services that may include but are not limited to medical call lines, telehealth services, and toxicology services creating an emergency network for patients to access timely and appropriate care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Rapid-Sequence Intubation

Reaffirmed January 2024, February 2018, April 2012, October 2006, and October 2000

Originally approved September 1996

Rapid-sequence intubation (RSI) is an important technique for airway management of patients in the emergency department (ED) is in the domain of emergency medicine practice. RSI is defined as a technique where a potent sedative or induction agent is administered virtually simultaneously with a paralyzing dose of a neuromuscular blocking agent to facilitate rapid tracheal intubation. The technique includes specific protection against aspiration of gastric contents, provides excellent access to the airway for intubation, and permits pharmacologic control of adverse responses to illness, injury, and the intubation itself. The American College of Emergency Physicians recognizes the role of RSI in modern emergency care and supports the following principles:

- Physicians performing RSI should possess training, knowledge, and experience in the techniques and pharmacologic agents used to perform RSI.

- Neuromuscular blocking agents and appropriate sedative and induction agents should be immediately available in the ED and accessible to all physicians who perform RSI in the ED.

- Quality review and patient monitoring should be addressed when policies about RSI are developed in the ED.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Recognition of Subspecialty Boards in Emergency Medicine

Revised February 2020, January 2014

Originally approved August 2007

The American College of Emergency Physicians (ACEP) recognizes the American Board of Medical Specialties (ABMS) and the American Osteopathic Association (AOA) as the only umbrella organizations authorized to establish and regulate medical specialty boards in the United States.

ACEP recognizes and supports the American Board of Emergency Medicine (ABEM), the American Osteopathic Board of Emergency Medicine (AOBEM), and the American Board of Pediatrics (ABP) as the certifying bodies in emergency medicine and pediatric emergency medicine.

ACEP believes the broad discipline of emergency medicine provides opportunities for the development of focused areas of special competence and expertise. The ABMS and AOA provide mechanisms whereby a parent board can recognize such special competence through subspecialty certification or certificates of added qualification. Through these processes, ABEM and AOBEM offer appropriately trained and credentialed diplomates the opportunity to sit for examinations to demonstrate their special competence. Successful candidates are awarded subspecialty certification or a certificate of added qualification.

ACEP recognizes only those emergency medicine subspecialty certifications developed and maintained through the ABMS/AOA process.

Appropriately trained and credentialed ABEM diplomates are eligible to sit for certification examinations in the subspecialties of Anesthesiology Critical Care Medicine, Emergency Medical Services, Hospice and Palliative Medicine, Internal Medicine-Critical Care Medicine, Medical Toxicology, Neurocritical Care, Pain Medicine, Pediatric Emergency Medicine, Sports Medicine, and Undersea and Hyperbaric Medicine. ACEP recognizes that ABEM-certified physicians can obtain subspecialty certification offered by other ABMS member boards in Addiction Medicine, Brain Injury Medicine, Clinical Informatics, and Surgical Critical Care.

AOBEM diplomates are eligible to sit for examinations to establish Certification of Added Qualification in Emergency Medical Services and Medical Toxicology. ACEP recognizes that AOBEM-certified physicians can obtain subspecialty certification offered by AOA Conjoint Examination Committees in Hospice and Palliative Care, Sports Medicine, and Undersea and Hyperbaric Medicine.

All future subspecialty board certifications and focused practice designations approved by ABEM or certificates of added qualification approved by AOBEM will be recognized by ACEP.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Reform of Tort Law

Revised October 2023

Reaffirmed April 2017

Revised April 2011, August 2009

Reaffirmed October 1998

Originally approved as Council Resolution CR027 titled, "Reform of Tort Law" September 1985

ACEP endorses in principle federal laws, state legislation, or constitutional amendments to implement tort legal reforms, including but not limited to the following:

- Limitation of liability for non-economic damages;
- Holding judges accountable for the quality of scientific evidence presented in medical malpractice litigation;
- Limitation of joint and several liability;
- Recognition of collateral sources of compensation in granting awards;
- Structured payment systems for damage awards;
- Reduction of term length in statutes of limitation;
- Controls on attorney's contingency fees;
- Qualifications for expert witnesses;
- Apologies without admissibility;
- Sovereign immunity for EMTALA required services;
- Recognition of local standards of care in rural areas;
- Immunity for following guidelines;
- Pilot programs to study innovation; and
- Communication resolution programs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Relationship Between Clinical Capabilities and Medical Equipment in the Practice of Emergency Medical Services Medicine

Originally approved June 2018

The American College of Emergency Physicians (ACEP) recognizes Emergency Medical Services (EMS) as a subspecialty practice of medicine. As such, the clinical practice of EMS Medicine requires commitment to evidence-based decisions, patient safety, and continuous quality improvement throughout all aspects of EMS systems. Decisions regarding clinical care and capabilities enabled by medical equipment chosen within an EMS system should be consistent with the following principles:

- Clinical standards of care developed, established, and promulgated by EMS physician medical directors., in the form of clinical care guidelines or protocols, form the foundation of an EMS system's provision of patient care.

- The medical equipment lists for apparatus and personnel in an EMS system must fully align with its clinical care guidelines or protocols of efficient, effective medical care and optimal patient outcomes.

- The authority (eg, EMS system physician medical director, EMS system physician advisory board, regional or state EMS physician oversight committee) responsible for applicable clinical care guidelines or protocols development, establishment, and promulgation should also be the authority for related medical equipment lists for apparatus and personnel in an EMS system to ensure alignment.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Reporting of Vaccine-Related Adverse Events

Originally approved January 2019

The American College of Emergency Physicians recognizes that vaccines effectively and significantly reduce the spread of vaccine-preventable infectious diseases, providing great substantial individual and public health benefits. Vaccines can cause minor adverse events, such as fever or localized reaction at the injection site, as well as rare, yet serious adverse events such as seizure and severe allergic reaction.

The American College of Emergency Physicians acknowledges the National Childhood Vaccine Injury Act of 1986 and reporting of adverse events to the Vaccination Adverse Event Reporting Systems (VAERS).[1] Reporting into VAERS can be completed by anyone, including clinical providers, patients and their families. The link below provides information on how to report. The primary purpose of VAERS is to identify unexpected adverse events associated with the use of vaccines, allowing the Centers for Disease Control and Prevention (CDC) and Food and Drug Administration (FDA) to evaluate and address potential safety concerns.

Centers for Disease Control and Injury Prevention. Vaccine Adverse Event Reporting System. https://vaers.hhs.gov/

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2018

Resident Training for Practice in Non-Urban/Underserved Areas

Revised June 2018 with current title

Reaffirmed April 2012, October 2006

Originally approved June 2000 titled "Resident Training for Practice in Non-Urban Areas"

The American College of Emergency Physicians (ACEP) endorses Medicare funding to train residents for practice in non-urban and underserved areas and encourages an RRC-EM pilot or demonstration project to train emergency medicine residents to practice in non-urban and underserved areas.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Responsibility for Admitted Patients

Revised April 2020,
June 2014

Originally approved
October 2007

The American College of Emergency Physicians (ACEP) believes that the best patient care occurs when there is no ambiguity as to which physician is responsible for each patient. Because admitted patients are sometimes held in the emergency department during the admission process, confusion may occur regarding which physician is responsible for an admitted patient's care.

For these reasons, ACEP endorses the following principles concerning admitted patients:

- Hospital policy and procedures should clearly delineate that once an admitting physician has accepted a patient, that admitting physician has assumed responsibility for the patient.
- The responsibility for an admitted patient's medical care rests with the admitting physician, regardless of the location of an admitted patient within the hospital.
- Emergency physicians may provide care to any admitted patient during a medical emergency.
- Emergency physicians should not be obligated to provide care to admitted patients during a medical emergency unless indemnified by the hospital or covered by the facility's professional liability insurance policy.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Retail-Based Clinics

Revised February 2020

Reaffirmed April 2014

Originally approved April 2008

The American College of Emergency Physicians (ACEP) recognizes the increasing prevalence of retail-based clinics, and believes the following attributes are important to patient care:

- **Scope of Service:** Retail-based clinics should have a well-defined and limited scope of clinical services. Prior to services being rendered, retail-based clinics should provide a clear and concise summary of their scope of services, as well as indicate the qualifications of the on-site health care personnel. Marketing materials should also reflect the qualifications of the on-site health care personnel.
- **Staffing:** Allied health personnel at retail-based clinics, such as nurse practitioners and physician assistants, should operate under appropriate physician supervision and in accordance with local and state regulations, and licensure requirements.
- **Coordination of Care:** Retail-based clinics should establish and maintain collaborative relationships with other area physician practices, clinics, hospitals, and emergency departments in order to maximize effective resource utilization and information exchange within the community. Retail-based clinics should encourage all patients to have a primary care physician and provide information leading to appropriate referrals to local medical practices for ongoing care.
- **Patient Health Records:** Retail-based clinics must maintain a system of medical records that are accurate, complete, easily accessible, and retrievable. Information from the clinical encounter should be made readily available to the patient's primary care physician.
- **Referrals:** The retail-based clinic must have a well-defined referral system for patients who present with symptoms beyond the clinic's defined scope of clinical services. These guidelines should include: indications for transfer, transfer agreements, detailed protocols for effective communication and transfer of information, and consideration of appropriate methods of transportation.
- **Patient Protection:** Retail-based clinics should be regularly inspected and subject to well-defined state and local standards and regulations. Policies and procedures must be in place to ensure adequate protection of patients and families with regard to HIPAA requirements, patient confidentiality, appropriate transfer of medical information, and infection

control. Retail-based clinics should have formal plans and protocols to handle emergency complications of the care that is provided.

- **Quality of Care:** Clinical services must be evidence-based and quality improvement oriented.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Reversal of Non-Vitamin K Antagonist Oral Anticoagulants (NOACs) in the Presence of Major Life-Threatening Bleeding

Revised January 2024

Reaffirmed February 2023

Originally approved
June 2017

Non-vitamin K antagonist oral anticoagulants (NOACs) have gained popularity as alternatives to warfarin for the prophylaxis of stroke and thromboembolic disease as well as treatment for thromboembolic disease. This increased use is being driven by the drugs' benefits including less frequent monitoring, almost no dietary restrictions, and fewer drug-drug interactions than warfarin. However, limitations in reversal of NOACs can complicate management in patients who present with major life-threatening bleeding while taking these drugs.

There are two broad categories of NOACs: direct thrombin inhibitors (DTIs) and factor Xa inhibitors. DTIs, such as dabigatran, prevent the conversion of fibrinogen to fibrin by binding to the active site of thrombin. Factor Xa inhibitors, which include rivaroxaban, apixaban, edoxaban, and betrixaban, bind to free and bound forms of Xa, reducing thrombin production.

For NOACs, bleeding is the most significant adverse effect, ranging from minor ecchymosis to life-threatening hemorrhage. Intracranial bleeding, spinal epidural hematoma, massive gastrointestinal bleeding, and retroperitoneal hemorrhage have all been reported with NOAC use and at times have led to death.

When patients who are taking NOACs present with actual or potential major bleeding, the most important historical factor is time since last dose. In the absence of renal failure, an interval greater than 3 to 5 half-lives since last dose (see Table) would imply little to no drug presence that requires reversal. More recent ingestions require further assessment and possible reversal interventions.

In patients taking NOACs who present with major bleeding, laboratory testing should include baseline and serial hemograms, coagulation studies, renal function, and a type and cross. Interpreting coagulation studies is not straightforward in these patients because the relationship is not directly

proportional to clinical effect and does not necessarily indicate level of anticoagulation. Dabigatran generally increases activated partial thromboplastin time (aPTT) more than prothrombin time/international normalized ratio (PT/INR); however, thrombin time correlates better with drug presence. With rivaroxaban there may be an increase in PT/INR rather than aPTT; however, in general anti-Xa assays calibrated to each individual factor Xa inhibitor correlate better with drug presence. Actual drug levels would be ideal, but it is the rare hospital that can perform such time-dependent testing. Thromboelastography may also provide some measure of anticoagulation effect. In conclusion, do not rely solely on routine coagulation studies to determine the need for reversal of NOACs.

In the presence of suspected drug effect and life-threatening bleeding, consideration should be given for expeditious reversal. To date, poor efficacy has been shown for the use of fresh frozen plasma in reversing these agents. Depending on the NOAC involved, there are a variety of reversal agents that may be potentially useful (see Table). The studies that exist use surrogate markers such as reversal of coagulation studies. Unfortunately, there are no randomized clinical trials providing patient-centered outcomes.

Patients with life-threatening bleeding, in the presence of dabigatran, may be given idarucizumab (Praxbind®), an FDA-approved monoclonal antibody fragment (see Table). If this antidote is not available, an activated 4-factor prothrombin complex concentrate (4F-aPCC) such as factor eight inhibitor bypassing activity (FEIBA®) may be useful; however, it is not FDA approved for this indication. Other alternatives include non-activated 4F-PCC (eg, Kcentra®) or recombinant Factor 7a (rVIIa), although there are fewer data to support these. Hemodialysis to enhance removal of dabigatran early after the last dose is unproven and potentially impractical.

A non-activated 4F-PCC (Kcentra®) or Andexanet alfa (ANDEXXA®), a factor Xa decoy protein, should preferentially be used for the rapid reversal of factor Xa inhibitors in cases of life-threatening bleeding. There is equivocal data regarding these treatments' efficacy and their adverse prothrombotic effects and, until further clinical trials, their use should be driven by local drug availability and institutional guidelines. If these are not available, 4F-aPCC (FEIBA®), an activated PCC, can be considered. Alternatively, if none of these agents are available, rFVIIa or even 3F-PCC with fresh frozen plasma may be administered.

Despite lack of evidence, additional adjunctive measures for severe life-threatening bleeding can be considered such as fresh frozen plasma, packed red blood cells, platelets, tranexamic acid, and desmopressin acetate (DDAVP). Ultimately, when considering the use of reversal agents, the potential for benefit must be weighed against the known risk of thromboembolic complications and their high cost. Institutions should consider the implementation of pathways or guidelines for the care of these complex patients. Because of rapidly evolving therapeutic advances, consider real-time consultation with a pharmacist or appropriate local resources for up-to-date recommendations in treating life-threatening bleeding from NOACs.

SELECTED REFERENCES

Connolly SJ, Milling TJ Jr, Eikelboom JW, et al. Andexanet alfa for acute major bleeding associated with factor Xa inhibitors. *N Engl J Med*. 2016; 375:1131-1141.

Cuker A, Siegal DM, Crowther MA, et al. Laboratory measurement of the anticoagulant activity of the non-vitamin K oral anticoagulants. *J Am Coll Cardiol*. 2014;64:1128-1139.

Cuker A, Husseinzadeh H. Laboratory measurement of the anticoagulant activity of edoxaban: a systemic review. *J Thromb Thrombolysis*. 2015;39:288-294.

Eerenberg ES, Kamphuisen PW, Sijpkens MK, et al. Reversal of rivaroxaban and dabigatran by prothrombin complex concentrate: a randomized, placebo-controlled, crossover study in healthy subjects. *Circulation*.

2011;124:1573-1579.

Marlu R, Hodaj E, Paris A, et al. Effect of non-specific reversal agents on anticoagulant activity of dabigatran and rivaroxaban: a randomized crossover ex vivo study in healthy volunteers. *Thromb Haemost*. 2012;108:217-224.

Pollack CV, Jr, Reilly PA, Eikelboom J, et al. Idarucizumab for dabigatran reversal. *N Engl J Med*. 2015;373:511-520.

Raval AN, Cigarroa JE, Chung MK, et al. Management of patients on non-vitamin K antagonist oral anticoagulants in the acute care and periprocedural setting: a scientific statement from the American Heart Association. *Circulation*. 2017;135:e604-e633.

Chaudhary R, Singh A, Chaudhary R, et al. Evaluation of Direct Oral Anticoagulant Reversal Agents in Intracranial Hemorrhage: A Systematic Review and Meta-analysis. *JAMA Netw Open*. 2022;5:e2240145. Published 2022 Nov 1.

TABLE. Reversal therapies for life-threatening bleeding due to NOACs.

NOAC CLASS	**Oral NOACs** Generic (Tradename)	**Drug Half Lives** (with normal renal function)	**Suggested Treatment Options**
Direct thrombin inhibitor	Dabigatran (Pradaxa®)	12 to 17 hours	**Idarucizumab (Praxbind®)** 5g (2 vials 2.5 g each) IV bolus May repeat in severe circumstances **Possible alternatives:** aPCC (FEIBA®) 50-100 IU/kg 4-factor PCC (Kcentra®) 50 IU/kg rVIIa 90 µg/kg 3-factor PCC (Profilnine®) 50 kg Fresh frozen plasma Hemodialysis Note: Ciraparantag (Aripazine™) is pending FDA approval for reversal of oral DTIs.
Factor Xa Inhibitor	Rivaroxaban (Xarelto®) Apixaban (Eliquis®) Edoxaban (Lixiana™, Savaysa®)	5 to 9 hours 12 hours 10 to 14 hours 37 hours	Andexanet alfa (ANDEXXA®) Low dose: 400 mg IV bolus then 4 mg/minute for up to 120 minutes High dose: 800 mg IV bolus then 8 mg/minute for up to 120 minutes **Possible alternatives:** 4-factor PCC (Kcentra®) 50 IU/kg aPCC (FEIBA®) 50-100 IU/kg rVIIa 90 µg/kg 3-factor PCC (Profilnine®) 50 IU/kg Fresh frozen plasma Note: Ciraparantag (Aripazine™) is pending FDA approval for reversal of factor Xa inhibitors.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Role of Emergency Physicians in Disaster Preparedness and Response (Impact of COVID Pandemic)

Originally approved October 2021

The ongoing COVID-19 pandemic unmasked many shortcomings in hospital and healthcare disaster planning and response. More focused need to be given to disaster that evolve over long periods of time and disrupt multiple facets of society. Many existing plans are based on faulty assumptions and unrealistic expectations. COVID-19 demonstrated the utility of having an emergency medicine presence at regional and state emergency operation centers (EOC). Emergency physicians possess the clinical and operational knowledge and skills, necessary to prepare for and respond to disasters.

***The American College of Emergency Physicians (ACEP) encourages emergency physicians to*:**

1. Assist their institutions and community to prepare for and respond to disasters at the local, regional, state, and federal level.
2. Serve as subject matter experts on the allocation of scarce health care resources. Emergency physicians must be at the table (direct input) when decisions are made, not just expected to respond to disasters.
3. Work with institutions and local health agencies to educate health care providers about disaster plans and demand realistic exercises that test those plans, in order to promote effective and timely response.
4. Advocate for sustainable disaster preparedness (surge capacity, planning, training, research, equipment, supplies, oversight, process improvement) by identifying and securing funding streams to develop, expand and enhance disaster preparedness at the local, state, and federal levels.
5. Work with institutional and public health leaders to effectively communicate public health and safety information.
6. Work with hospitals and health systems to protect healthcare workers, their families, and their patients from unnecessary risks. These risks (perceived and real) undermine the effectiveness of disaster response by health care providers.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Role of Poison Centers in Emergency Health Care, Preparedness, and Response

Reaffirmed January 2022, April 2016

Revised September 2010 titled "Role of Poison Centers in Emergency Health Care, Preparedness, and Response"

Reaffirmed October 2006

Revised March 2000

Originally approved September 1995 titled, "Poison Information and Treatment Systems"

The American College of Emergency Physicians (ACEP) strongly supports the availability of high-quality, fully funded, certified poison centers to provide:

- Triage and management of poisoning calls from the public, saving medical expenditures for unnecessary health care visits while referring patients appropriately when medical evaluation is needed, as well as mitigating overcrowding of emergency departments.
- Consultation to physicians and other health care providers in the diagnosis and management of poisoning cases.
- Preparedness and response services to emergency responders, health care providers, public health officials, and the public during pandemics, public health emergencies and other hazards events, including chemical, biological, radiological, and nuclear incidents.
- Data surveillance to detect and monitor disease outbreaks and epidemiological trends.

ACEP supports the availability of evidence-based poison center triage/ management services and prevention policies through legislative and regulatory advocacy at the local, state and national levels.

Emergency physicians have a unique opportunity and responsibility to work with stakeholders to reduce the prevalence and impact of poisonings through advocacy, education and research initiatives.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2020

Role of the Emergency Physician in Injury Prevention and Control for Adult and Pediatric Patients

Revised June 2020

Reaffirmed April 2014

Revised June 2008, replacing rescinded policy "Role of Emergency Physicians in the Prevention of Pediatric Injury"

Reaffirmed October 2002

Originally approved March 1998 titled "The Role of the Emergency Physician in Injury Prevention and Control"

The American College of Emergency Physicians (ACEP) believes that as frontline physicians providing care for acutely injured adult and pediatric patients, emergency physicians are keenly aware of the associated consequences, both physical and emotional, to the patient, their family, and their community. This unique insight provides emergency physicians an opportunity to be leaders in injury prevention research, policy, and patient and provider education. Therefore, ACEP affirms the following:

- Emergency physicians should lead injury prevention research. Research is the cornerstone of our evidence-based practice and informs our ability to advocate for injury prevention interventions and provides meaningful information to our patients and trainees.

- Emergency physicians should advocate for evidence-based injury prevention policies in a non-partisan fashion. It is our responsibility as a College to advocate for our patients, ensuring that they are able to benefit from well-crafted, data-driven injury prevention policies.

- Emergency physicians have both the right and responsibility to provide injury prevention counseling and education to their patients, families and communities in a respectful and evidence-based manner.

- Our role as educators includes teaching the next generation of emergency physicians, and other allied health professionals about injury prevention. Therefore, we must support the development of leaders in the fields of injury prevention research, advocacy and education.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Role of the Emergency Physician in the Care of Trauma Patients

Originally approved
April 2020

The American College of Emergency Physicians (ACEP) believes that emergency physicians play a central role in the care of injured patients within the health care system. The treatment of trauma patients is a key component of emergency medicine training and practice. Across the spectrum of trauma, the majority of injured patients will receive care primarily from an emergency physician.

ACEP believes that patients presenting for care in an emergency department are best served by receiving care from board-eligible or board-certified emergency physicians, either individually or as a member of a multi-disciplinary trauma team. Emergency physicians play an instrumental role in the management of severely injured trauma patients, particularly in the aspects of assessment, resuscitation, airway management, point-of-care ultrasound, and bedside procedures. Care of these patients is best achieved when individual roles and responsibilities are standardized and understood by all members of the team involved in protocolized trauma care.

ACEP acknowledges the role of trauma surgeons as the providers of definitive care for the most critically injured patients and the importance of close collaboration between emergency physicians and trauma physicians in developing safe systems of care. ACEP strongly supports the implementation of pre-arranged transfer protocols to maintain a link between facilities without access to trauma surgeons with those institutions that maintain trauma services.

ACEP supports efforts to ensure that there are evidence-based national standards of trauma practice and the promulgation of those standards in the creation of safe trauma systems. Emergency physicians, given their central role in the care of these patients, must play an important role in the development and validation of these standards.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2016

Role of the State EMS Medical Director

Revised October 2016, April 2009

Originally approved October 2004

A joint statement by the American College of Emergency Physicians (ACEP), the National Association of EMS Physicians (NAEMSP), and the National Association of State EMS Officials (NASEMSO)

Physician oversight of emergency medical services (EMS) by a dedicated and qualified medical director is critical to the successful delivery of quality out-of-hospital patient care at all jurisdictional levels. It is essential that the lead agency for EMS within each of the fifty states, the District of Columbia, Puerto Rico, the territories of Guam, the Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands, has a state EMS medical director.

The state EMS medical director provides specialized medical oversight in the development and administration of the EMS system and is an essential liaison with local EMS agencies, hospitals, state and national professional organizations, and state and federal partners. The state EMS medical director provides essential physician leadership for key aspects of the state EMS system including: system oversight, coordination of guideline development, planning for EMS care in austere environments and during disasters and mass casualty incidents, identification and implementation of best practices, system quality improvement, patient safety, education, and research. Furthermore, the state EMS medical director is vital to the EMS system at the local level by promoting integration of direct and indirect physician oversight for the comprehensive emergency health care delivery system.

The state EMS medical director should be a physician with extensive experience in EMS medical direction and an unrestricted medical license within the state. Ideally, the state EMS medical director will be a physician who is board-certified in emergency medicine or in the subspecialty of EMS, by the American Board of Emergency Medicine or the American Osteopathic Board of Emergency Medicine.

The state EMS medical director requires political, administrative, and financial support to successfully function in this role. The foundation of the relationship between the state's lead agency for EMS and the state EMS medical director should be clearly defined within legislation, regulation, or a written contract, including language defining the job description,

responsibilities and authority. The state EMS medical director should be provided with mutually agreed upon compensation for services, necessary materials and resources, administrative support, and liability protection specific to the unique duties and actions performed.

In summary, ACEP, NAEMSP, and NASEMSO strongly encourage the establishment of a permanent, compensated position for a state EMS medical director in all fifty states, the District of Columbia, Puerto Rico, the territories of Guam, the Virgin Islands, American Samoa, and the Commonwealth of the Northern Mariana Islands.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Rural Emergency Medical Care

Revised June 2022 with current title

Originally approved June 2017 titled "Definition of Rural Emergency Medicine"

Rural emergency medicine is urgent or emergent medicine practiced in geographic areas with low population densities and resource constraints, including ready access to more specialized care facilities. Rural emergency departments provide critical services for their communities, including facilitating earlier evaluation and entry into the healthcare system, stabilization and initiation of treatment, and coordinated transfer to a tertiary care facility. As rural emergency departments (EDs) provide a safety net for some of the country's most vulnerable and underserved communities, the American College of Emergency Physicians (ACEP) believes that all emergency care should be provided, directed, and/or supervised by a board-certified/board-eligible (BC/BE) emergency physician.

ACEP encourages endeavors to investigate volumes, clinician staffing patterns, and common barriers of care and staffing in rural settings and efforts to improve rural access to BC/BE emergency care. Avenues include, but are not limited to, creation of links between rural hospitals and larger health networks, rural medicine electives for students and residents, student loan forgiveness for physicians serving rural communities, and telemedicine.

ACEP encourages rural EDs to retain board certified emergency physicians (as defined by the ACEP policy statement "Definition of an Emergency Physician") to serve as ED medical directors and provide ACEP-led emergency medicine education so there will be physician-led teams in all United States EDs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Safe Discharge from the Emergency Department

Originally approved June 2019

The American College of Emergency Physicians (ACEP) recognizes the social, societal, and physical determinants of health that often affect patients discharged after an emergency encounter, but also recognizes that there are unique procedural and resource limitations that differentiate inpatient and emergency department (ED) discharges. As such, ACEP believes the decision to discharge a patient from the ED should be a clinical decision by the emergency department physician or provider who cares for that patient and deems the patient stable and safe for discharge. ACEP opposes local, state, federal, and other externally mandated "safe" discharge requirements that supersede the clinical judgment of a treating emergency physician or provider.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Safer Working Conditions for Emergency Department Staff

Originally approved April 2021

The American College of Emergency Physicians (ACEP) supports safety in the working environment for all emergency medicine physicians and staff. The emergency departments (EDs) where emergency physicians lead care teams are particularly vulnerable to safety hazards, and specific considerations should be made to ensure workplace safety. To that end, ACEP supports the following as standards for departmental safety to ensure physicians and staff are protected and supported in reporting safety concerns:

- Leadership promotion of a culture of safety and open reporting of safety concerns.
  - Review of all safety and violence concerns and reports back on outcomes, plans, and resolutions.
  - Development of policies and procedures that encourage reporting of safety concerns.
  - Protections and support for physicians who take personal safety precautions to prevent harm.
  - Protections and support for physicians who raise or report safety concerns.
- Appropriate exterior facility infrastructure.
  - Appropriate entry way and facility lighting.
  - Secure and working means of efficient ingress and egress for staff to the ED.
  - Barriers to rapid and unabated public-entry to the ED.
  - Working doors, exits, and entry pathways.
- Appropriate interior facility infrastructure.
  - Appropriate separation of patient care and staff work areas.
  - Appropriate visibility between and within treatment areas.
  - Secure areas for at risk or violent patients.
  - Working and functioning equipment, clinical tools, and furniture.
- Adequate safety, planning, reporting, and training
  - Trained and empowered security officer or equivalent coverage 24/7/365.
  - Non-staff solutions such as installation of metal detectors, security alarms, other forms of technological security/alert systems, and agreements with local law enforcement agencies.

  - De-escalation training for all members of the care team and support staff in the ED. If possible, development and deployment of a highly trained de-escalation team to include psychiatric and security resources.
  - Disaster management training for all members of the care team and support staff in the ED including active shooter training.
  - Violence and safety alerts incorporated into the electronic health record.
- Secure and safe storage for any hazardous materials or confiscated items.
- EMTALA compliant written behavioral standards for patients, visitors, and others in the ED that are posted and visible to all comers.
- Appropriate equipment to prevent workplace injury as well as adequate support staff to maintain equipment in working order and keep equipment and work areas clean, etc.
  - Sufficient and ergonomic seating for physicians and clinical staff.
  - Adequate lighting in clinical and staff areas.
  - Adequate and appropriate personal protective equipment.
  - Patient lifting devices.
  - Equipment and systems for fall prevention.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2019

Salary and Benefits Considerations for Emergency Medical Services Professionals

Originally approved April 2019

The American College of Emergency Physicians (ACEP) affirms that Emergency Medical Services (EMS) systems provide essential healthcare elements for the health and wellbeing of patients and communities. Given the important responsibilities and roles fulfilled by EMS professionals, these healthcare providers should be fairly compensated with salary and benefits commensurate with such responsibilities and roles which should take into account salient variables such as:

- Educational achievements
- Length of professional certifications/licensures
- Experience
- Length of employment
- Rank, roles, and responsibilities
- Duty hours and schedules
- Risk of injury and death

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Scholarly Sabbatical Leave for Emergency Medicine Faculty

Reaffirmed January 2019, June 2013, October 2007

Originally approved April 2001

Self-directed and lifelong learning is essential to the acquisition of new knowledge, skills, and ideas among academic emergency medicine faculty. A period of scholarly sabbatical leave may facilitate such learning. The American College of Emergency Physicians (ACEP) believes that:

- Applicants for a sabbatical leave should have seven or more years of post-residency practice.
- Eligible applicants should have evidence of scholarly accomplishment in at least one of these areas: patient care, teaching, research, or administration.
- The department chair, applicant, and institutional and departmental leadership should mutually determine the length of the sabbatical leave. In general, the sabbatical should not be less than two months or longer than 12 months in duration.
- The department chair, applicant, and institutional and departmental leadership should mutually determine financial support. Specific consideration should be given to salary support for the applicant and support for the department to ensure appropriate maintenance of departmental integrity for the duration of the sabbatical.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

School Bus Safety

Revised June 2019, June 2013

Reaffirmed October 2006

Revised March 2000 with current title

Originally April 1985 titled "School Buses"

The American College of Emergency Physicians (ACEP) supports a comprehensive approach to school bus safety. Those involved in school bus safety including government regulators, investigators, manufacturers, standards organizations, bus transportation leaders, school officials, public health officials, physicians, and parents have an obligation to advance safety and advocate for the protection of children using school bus transportation. In support of these principles, ACEP believes:

- School bus safety research should be supported as a priority at the national level and funded accordingly.
- New technologies and approaches should be considered and implemented when evidence-based methods and best practices show a reasonable benefit and cost-effectiveness.
- The protection of children is paramount and the cost-effectiveness of implementing safety programs should weigh in favor of child safety.
- School bus safety programs should incorporate the age-specific factors of school-age children.
- The entire school bus system and environment of driving should be considered in all safety programs. This can include passenger waiting and bus stop areas, the immediately adjacent streets and sidewalks, loading and unloading, vehicle visibility, design and crash worthiness, passenger restraint and crash mitigation systems, passenger ingress and egress, and other factors important for safety.
- School bus drivers should be selected, trained and maintained with an emphasis on safe driving.
- The behavior of other drivers is a major factor in assuring the safety of children using school buses. Efforts to improve school bus safety will necessarily need to consider other users of the road.
- States and municipalities should require mandatory school bus safety education programs and driver training for all vehicle licensees and enact enforcement laws that strongly discourage unsafe behaviors.
- States should collect and report school bus safety data using standardized methods, and the federal government should analyze the data and provide an annual report to the public.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Screening for Disease and Risk Factors in the Emergency Department

Originally approved
April 2021

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "Principles of Screening for Disease and Health Risk Factors in the Emergency Department"

The emergency department (ED) is a common, and often essential, access point to the health care system. In some cases, particularly among underserved communities with limited access to routine outpatient services, ED visits represent a potential opportunity to perform disease and risk factor screening.

Disease screening leads to early diagnosis, management, and treatment of disease, reducing morbidity and mortality. Further, screening can limit transmission of infectious diseases, reduce overall healthcare costs, and improve population health. Similarly, screening for disease and social risk factors recognizes that a significant portion of individual and community health is influenced by these underlying conditions. Modifying risk factors may ultimately reduce unnecessary ED utilization and lead to improved health outcomes.

At the same time, disease and risk factor screening is not the primary function of the ED. Choosing what to screen for, and under what condition screening can and should occur, entails thoughtful consideration of ED capacity and community needs. The American College of Emergency Physicians (ACEP) recommends that EDs strongly consider screening for disease and risk factors based on the following criteria:

1. Screening should rely on evidence-based strategies drawn from the United States Preventive Services Task Force (USPSTF), the Centers for Disease Control and Prevention, peer-reviewed emergency medicine literature, and other trusted sources.

2. Screening should consider local disease and risk factor epidemiology.

3. Screening should only occur if there is sufficient capacity, such that primary ED functions (treating emergency conditions) are not delayed, and key quality metrics are largely unaffected.

4. Screening processes should be developed to work within ED workflow and minimize impact on patients and ED staff.

5. Screening initiatives should strive for transparency and communication with patients and community stakeholders.

6. Screening with inadequate or inappropriate follow-up systems available for the targeted disease or risk factor may lead to unintentional harm.

7. Screening should be performed in a manner that is financially sustainable to patients and the health system.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Screening Questions at Triage

Revised April 2022

Originally approved October 2016

A joint policy statement by the American College of Emergency Physicians and the Emergency Nurses Association

Triage is a rapid evaluation of patient acuity for the purpose of establishing the order and/or the location in which the patient should be seen by an emergency physician, physician assistant (PA), or nurse practitioner (NP). Optimal patient care occurs when the length of time between the patient's presentation and the time that the patient is seen by an emergency physician, PA, or NP is as short as possible. For this reason, triage may be bypassed when patient care space and staff are immediately available.

Delays can occur when regulatory questions are routinely asked of patients during initial triage. Although screening for active thoughts of harm to self or others, substance use/abuse, and interpersonal violence can provide important information about the care some patients may require, the routine inclusion of general screening questions in the initial triage process creates a preventable delay in caring for patients. Screening information should be obtained after the initial prioritization process is complete and should not interfere with timely access to needed care.

The American College of Emergency Physicians and the Emergency Nurses Association support initial triage processes that limit the focus and content of questions to information pertinent to the patient's condition to determine the priority in which patients should be seen by an emergency physician, PA, or NP.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Selective Triage for Victims of Sexual Assault to Designated Exam Facilities

Reaffirmed February 2018 and April 2012

Originally approved October 2006

The American College of Emergency Physicians supports:

- The collection of forensic evidence (performance of evidentiary examinations) by specially educated and clinically trained personnel when available and appropriate.
- The development and funding of additional Sexual Assault Nurse Examiner (SANE)/Sexual Assault Response Team (SART) programs.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Separation of Children from Family/Guardians

Revised January 2021

Originally approved June 2019

In order to ensure protection of minor children who might need to be separated from family/guardians, the American College of Emergency Physicians (ACEP) supports the following concepts:

- ACEP encourages emergency physicians to strongly and publicly voice their disapproval of national, state, or local policies that unnecessarily separate minor children from their parents without evidence or strong suspicion of child abuse or neglect.
- The risks to the child of remaining with family/guardians should be serious, imminent, and clearly identified.
- Established legal and administrative procedures for separation from family/guardians should be disclosed transparently and applied consistently and justly.
- If separation is determined to be necessary, it should be for the briefest duration possible and provided in a manner that minimizes emotional and physical stress to the child to helps avoid the residual psychological harms of separation.
- A process for reunification with family/guardians, placement of the child with other family caregivers, or other permanent solution should be outlined in advance of the physical separation.
- Sick and/or injured children should receive prompt and thorough medical evaluation and treatment when indicated.
- The care of the separated child should be clearly documented and available for independent review at the family/guardians' request.
- All care of the separated child should adhere to applicable local and constitutional law and respect the United Nations Universal Declaration of Human Rights.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

Social Services and Care Coordination in the Emergency Department

Revised October 2023 with current title, October 2020 titled "Social Work and Case Management in the Emergency Department, April 2019

Reaffirmed June 2013

Originally approved October 2007 titled "Patient Support Services"

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "Social Work and Case Management in the Emergency Department"

ACEP recognizes the impact of health-related social needs (HRSN) such as poverty, unemployment, interpersonal violence, housing instability, food insecurity and inadequate access to health care on our patients' health and well-being. After discharge, patients seen in the emergency department (ED) frequently require access to community resources for HRSN. ACEP supports the integration of social service referral into emergency care. Social services can complement emergency medical care by addressing emergency needs (such as shelter from the elements) and reducing long-term ED utilization resulting from unaddressed social determinants of health (SDOH).

ACEP further recognizes that comprehensively addressing HRSN within the ED is best accomplished by dedicated staff, such as social workers, case managers, patient navigators, and other individuals with specialized training in social services delivery. Social service professionals are more experienced and better equipped than medical staff to coordinate outpatient follow-up care and social support services. Social workers and other appropriately trained staff in EDs can also assist medical staff in serving behavioral health patients through safety assessment and disposition. ACEP also believes that dedicated ED social services personnel allow health systems to provide safe and medically appropriate, yet cost-saving, outpatient alternative care and chronic disease management for both adult and pediatric patients.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Special Roles for Emergency Medical Services Professionals

Originally approved February 2018, replacing the following rescinded policy statements:

- Domestic Violence: The Role of EMS Personnel (1995-2018)
- EMS as an Essential Public Safety Service (2003/2018)
- Expanded Roles of EMS Personnel (1997-2018)

The American College of Emergency Physicians (ACEP) believes that Emergency Medical Services (EMS) professionals may fulfill multiple roles in the continuum of a patient's acute medical care, and supports the following principles:

- *Patient Welfare Screening:* In the course of patient assessment and care, EMS professionals may observe situational dynamics that lead prudent healthcare providers to have concern regarding a patient's exposure or involvement in domestic violence, human trafficking, animal attacks, acts of terrorism or other factors imperiling their mental and/or physical health. EMS professionals must exercise due patient advocacy and fulfill any locally applicable legal reporting requirements to subsequently treating healthcare professionals, law enforcement, protective services, and/or otherwise identified agencies in efforts to protect the wellbeing of the patient and the overall public. Specific education and training to best prepare and protect EMS professionals in this role must be included in initial and continuing EMS curriculums.

- *Operational Specific Scope(s) of Practice:* Increasing healthcare system demands may create "gap" needs, opportunities that specially trained EMS professionals may fulfill. Evidence must include a formal needs assessment and be clear and compelling that significant patient benefit will result from the selected scope(s) of practice roles for EMS professionals. Appropriate physician-led medical oversight is essential to the safety and success of operational specific scope(s) of practice programs. Operational specific scope(s) of practice programs must conform to all applicable federal, state, and local regulations and laws. Appropriate initial and continuing education and continuous quality improvement must be included for EMS professionals expected to fulfill duties in an any scope of practice. Operational specific scope(s) of practice programs conducted or coordinated by EMS systems must ensure the continuing capabilities of the EMS system and that all patients retain access to emergency care utilizing the prudent layperson standard.

- *"Essential to Public Health & Safety":* While recognized as a formal subspecialty practice of medicine by the American Board of Medical Specialties, EMS additionally represents an essential component to a community's overall wellbeing in serving the health and medical safety of its citizens. EMS professionals represent indispensable members of a locale's emergency response system and in aggregate, represent an essential aspect of both national health and human services and national homeland security capabilities. EMS is on par with law enforcement and fire suppression services in importance of critical services within a community. All such critical services should be significantly and adequately funded and included in community resiliency planning and operations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Specialty Hospitals

Revised June 2023, June 2017, April 2011

Originally approved October 2004

The American College of Emergency Physicians (ACEP) believes that quality patient care can be supported within the existing healthcare system only if access to timely specialty services is assured through appropriate public policy initiatives and health care reimbursement systems.

Physician migration to specialty hospitals, defined as those that are primarily or exclusively engaged in the care and treatment of patients with a cardiac, orthopedic, or psychiatric condition or receiving a surgical procedure,[1] may lead to loss of specialty physician coverage and access to care for emergency patients, which risks straining the existing health care system and may lead to adverse health consequences.

ACEP supports mitigating such adverse consequences with continued application and enforcement of the Emergency Medical Treatment and Labor Act and with additional measures to preserve patient care and safety in full-service hospitals. Policies must be maintained and enacted that ensure specialty hospitals do not become a detriment to emergency department availability of on-call specialists, hospital sustainability, or access to care.

Reference

1. Centers for Medicare and Medicaid Services. Specialty Hospital Issues. Notification issued March 2004. Available at: https://www.cms.gov/Medicare/Fraud-and-Abuse/PhysicianSelfReferral/specialty_hospital_issues.html. Last accessed June 8, 2023.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Spinal Motion Restriction in the Trauma Patient

Originally approved February 2018, replacing the following rescinded policy statement:
- EMS Management of Patients with Potential Spinal Injury (2015-2018)

A joint policy statement of the American College of Emergency Physicians, the American College of Surgeons Committee on Trauma, and the National Association of EMS Physicians

Used by permission from *Prehospital Emergency Care*

The American College of Surgeons Committee on Trauma (ACS-COT), American College of Emergency Physicians (ACEP), and the National Association of EMS Physicians (NAEMSP) have previously offered varied guidance on the role of backboards and spinal immobilization in out-of-hospital situations.[1,2] This updated uniform guidance is intended for use by emergency medical services (EMS) personnel, EMS medical directors, emergency physicians, and trauma surgeons as they strive to improve the care of trauma victims within their respective domains. This document is not meant to be a complete review of all publications on this topic, but rather a consensus statement based on the combination of available peer-reviewed, published evidence and expert opinion.

Points of Consensus

1. Unstable spinal column injuries can progress to severe neurological injuries in the presence of excessive movement of the injured spine.

2. While current techniques limit or reduce undesired motion of the spine, they do not provide true spinal immobilization. For this reason, the term "spinal motion restriction (SMR)" has gained favor over "spinal immobilization", although both terms refer to the same concept. The goal of both SMR and spinal immobilization in the trauma patient is to minimize unwanted movement of the potentially injured spine.

3. While backboards have historically been used to attempt spinal immobilization, SMR may also be achieved by use of a scoop stretcher, vacuum splint, ambulance cot, or other similar device to which a patient is safely secured.

4. Indications for SMR following blunt trauma include:
   i. Acutely altered level of consciousness (eg, GCS < 15, evidence of intoxication)

ii. Midline neck or back pain and/or tenderness
iii. Focal neurologic signs and /or symptoms (eg, numbness or motor weakness)
iv. Anatomic deformity of the spine
v. Distracting circumstances or injury (eg, long bone fracture, degloving or crush injuries, large burns, emotional distress, communication barrier, etc.) or any similar injury that impairs the patient's ability to contribute to a reliable examination

5. SMR, when indicated, should apply to the entire spine due to the risk of noncontiguous injuries.[3] An appropriately-sized cervical collar is a critical component of SMR and should be used to limit movement of the cervical spine whenever SMR is employed. The remainder of the spine should be stabilized by keeping the head, neck and torso in alignment. This can be accomplished by placing the patient on a long backboard, a scoop stretcher, a vacuum mattress or an ambulance cot. If elevation of the head is required, the device used to stabilize the spine should be elevated at the head while maintaining alignment of the neck and torso. SMR cannot be properly performed with a patient in a sitting position.

6. All patient transfers create potential for unwanted displacement of an unstable spine injury. Particular attention should be focused on patient transfers from one surface to another including, for example, ground to ambulance cot. A long spine board, a scoop stretcher, or a vacuum mattress is recommended to assist with patient transfers in order to minimize flexion, extension or rotation of the possibly injured spine.

7. Once a patient is safely positioned on an ambulance cot, transfer or extrication devices may be removed if an adequate number of trained personnel are present to minimize unnecessary movement during the removal process. The risks of patient manipulation must be weighed against the benefits of device removal. If transport time is expected to be short, it may be better to transport a patient on the device and remove it on arrival at the hospital. If the decision is made to remove the extrication device in the field, SMR should be maintained by assuring that the patient remains securely positioned on the ambulance cot with a cervical collar in place.

8. Hospitals should be prepared and equipped to carefully and quickly remove patients from a long backboard, scoop stretcher or vacuum mattress as soon as possible after arrival at the hospital. Safe transfer may require the use of a slider board or similar device in order to maintain SMR during patient movement. Procedures should be in place to assure that a sufficient number of properly trained individuals are available to assist with patient transfers in order to minimize the risk of inadvertent displacement of a potentially unstable spinal injury.

9. There is no role for SMR in penetrating trauma.[4,5]

10. SMR in Children
    i. Age alone should not be a factor in decision-making for prehospital spinal care, both for the young child and the child who can reliably provide a history.[6,7]
    ii. Young children pose communication barriers, but this should not mandate SMR purely based on age.[6,7]
    iii. Based on the best available pediatric evidence from studies that have been conducted through the Pediatric Emergency Care Applied Research Network (PECARN), a cervical collar should be applied if the patient has any of the following:[8-10]
        a. Complaint of neck pain;
        b. Torticollis;

c. Neurologic deficit;
d. Altered mental status including GCS <15, intoxication, and other signs (agitation, apnea, hypopnea, somnolence, etc.)
e. Involvement in a high-risk motor vehicle collision, high impact diving injury, or has substantial torso injury.

iv. There is no evidence supporting a high risk/incidence for noncontiguous multilevel spinal injury in children. The rate of contiguous multilevel injury in children is extremely low at 1%. The rate of non-contiguous multilevel injury in children is thought to be equally as low.[10]
v. Minimize the time on backboards with consideration for use of a vacuum mattress or padding as adjuncts to minimize the risk of pain and pressure ulcers if this time is to be prolonged.
vi. Because of the variation in the head size to body ratio in young children relative to adults, additional padding under the shoulders is often necessary to avoid excessive cervical spine flexion with SMR.

References

1. White CC, Domeier RM, Millin MG. EMS spinal precautions and the use of the long backboard - resource document to the position statement of the National Association of EMS Physicians and the American College of Surgeons Committee on Trauma. *Prehosp Emerg Care*. 2014;18(2):306-314.
2. American College of Emergency Physicians. Policy Statement- EMS Management of Patients with Potential Spinal Injury. 2015. Available at: http://www.acep.org/Physician-Resources/Policies/Policy-Statements/EMS-Management-of-Patients-with-Potential-Spinal-Injury. Accessed July 25, 2016.
3. American College of Surgeons Committee on Trauma. Advanced Trauma Life Support Course Manual, Chapter 7, Spine and spinal cord injuries. 9th ed. Chicago, IL: American College of Surgeons; 2012.
4. Haut ER, Kalish BT, Efron DT, et al. Spinal immobilization in penetrating trauma: more harm than good? *J Trauma*. 2010;68:115-121.
5. Velopulos CG, Shihab HM, Lottenburg L, et al. Prehospital spine immobilization/spinal motion restriction in penetrating trauma: a practice management guideline from the Eastern Association for the Surgery of Trauma (EAST). *J Trauma Acute Care Surg*. 2018;84(5):736-744.
6. Pieretti-Vanmarcke R, Velhamos GC, Nance ML, et al. Clinical clearance of the cervical spine in blunt trauma patients younger than 3 years: a multi-center study of the AAST. *J Trauma*. 2009;67: 543–550.
7. Hale DF, Fitzpatrick CM, Doski JJ, et al. Absence of clinical findings reliably excludes unstable cervical spine injuries in children 5 years or younger. *J Trauma Acute Care Surg*. 2015;78:943-948.
8. Leonard JC, Kuppermann N, Olsen C, et al. Factors associated with cervical spine in children after blunt trauma. *Ann Emerg Med*. 2011;58(2):145-155.
9. Leonard JC, Jaffe DM, Olsen CS, et al. Age-related differences in factors associated with cervical spine injuries in children. *Acad Emerg Med*. 2015;22:1-6.
10. Leonard JR, Jaffe DM, Kuppermann N, et al. Cervical spine injury patterns in children. *Pediatrics*. 2014;133(5):e1179-e1188.

This policy statement has been published in *Prehospital Emergency Care* at the following location:
https://www.tandfonline.com/doi/full/10.1080/10903127.2018.1481476

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Staffing Models and the Role of the Emergency Department Medical Director

Originally approved April 2020

The American College of Emergency Physicians (ACEP) believes that it is the responsibility of the emergency department (ED) medical director to identify the most appropriate local staffing model to achieve operational efficiency while maintaining clinical quality and physician-directed or supervised care.

Though multiple staffing models utilizing physicians and other clinicians exist, the needs of each individual ED are unique. The utilization and distribution of staff within the ED should be determined at the site level by local ED leadership, who are responsible for and/or have a role in staff hiring, training/onboarding, and supervision.

The medical director and other local physician leaders should be responsible for establishing local processes and practices that ensure both sufficient physician training/onboarding and availability, as well as the opportunity for safe supervision of other clinicians to ensure clinical quality.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2021

Standardized Protocols for Optimizing Emergency Department Care

Revised June 2021

Originally approved October 2015

The American College of Emergency Physicians (ACEP) supports and endorses the use of standardized nursing protocol orders (also referred to as standardized procedures, order sets, standing orders, or triage protocols) in the emergency department (ED) for initiation of patient evaluation and care prior to evaluation by a physician, nurse practitioner (NP), or physician assistant (PA). The use of such protocols is a patient-centric practice that is safe and effective in enhancing patient care. Standardized protocols have the potential to reduce variation in care, enhance workflow, improve coordination of care, and modify practice through evidence-based care.

ACEP is committed to ensuring that patients presenting to the ED receive timely high-quality care. Due to the nature of unscheduled care and unpredictable surges in patient volume and acuity, there are times when a physician, NP, or PA is not immediately available to initiate evaluation and care. In these instances, many facilities have found it beneficial to begin the evaluation and care of patients under standardized protocols enacted by nursing staff within their scope of practice that include but are not limited to:

- Instituting evaluation or treatment for conditions that are particularly time-sensitive (eg, an electrocardiogram and aspirin for myocardial ischemia)
- Enhancing patient comfort (eg, acetaminophen for fever)
- Reducing the overall time patients spend in the ED by initiating testing and treatment earlier during the patient's stay
- Improving overall patient safety by reducing ED time to treatment
- Improving the patient experience

Standardized protocols are a set of pre-approved orders that include a specifically defined patient population and clinical scenario(s) in which these orders may be carried out by nursing staff without any additional physician, NP, or PA input, approval, or order, either written or verbal.

1. Standardized protocols should be developed collaboratively by physician and nursing leadership with input from other involved hospital departments as necessary, including pharmacy, risk management, laboratory, hospital administration, etc., as appropriate.
2. Standardized protocols should be based on the best available evidence. ACEP acknowledges that for some standardized protocols, sufficient evidence may not exist to either support or refute their use; in such cases consensus-based protocols are appropriate.
3. Standardized protocols should identify the pre-approving physician or medical staff body. By nature of the fact that the protocols have been pre-approved by physician and nursing leadership, ACEP does not believe that any physician, NP, or PA should be required to authenticate an order that he or she did not directly initiate.
4. ACEP believes that services rendered by nursing staff under a standardized protocol should be reimbursed as if ordered contemporaneously by a physician, NP, or PA.
5. Use of a standardized protocol does not, in and of itself, create a physician-patient relationship.
6. If standardized protocols are utilized, robust education and continuous quality improvement programs should be in place.

ACEP encourages regulatory and credentialing bodies to develop their policies and procedures regarding standardized protocols with these considerations.

* This policy does not address standardized protocols used in the indirect supervision of PAs and NPs by physicians.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved September 2018

Standards for Measuring and Reporting Emergency Department Wait Times

Reaffirmed September 2018

Originally approved October 2012

The American College of Emergency Physicians (ACEP) recommends that the reporting of emergency department (ED) patient waiting times for initial evaluation should be standardized.

As such, ACEP recommends that:

- ED patient "wait time" should be defined as "door to provider contact time." [1,2]
- Provider is defined as physician (MD, DO), advanced practice nurse, or physician assistant (PA).
- Measurement of the "door to provider contact time" should be the sole metric used in public advertising to describe ED patient "wait time."
- Provider contact time is defined by either the face-to-face evaluation of the patient by the provider or the initiation by the provider of specific diagnostic and/or therapeutic orders.
- The calculation of wait time should be the longest amount of time that a patient is currently waiting to see a provider.
- Public advertising of ED patient "wait time" should include a time stamp of the last moment the metric was updated or refreshed.
- Ideally, advertised times should be accurate and reflect real-time waits. However, posted wait times should be updated at least hourly to be meaningful to patients.

1. Welch SJ, Asplin BR, Stone-Griffith S, Davidson SJ, Augustine J, Schuur J; Emergency Department Benchmarking Alliance. Emergency Department Operational Metrics, Measures and Definitions: Results of the Second Performance Measures and Benchmarking Summit. Ann Emerg Med. 2011 Jul;58(1):33-40

2. Welch SJ, Stone-Griffith S, Asplin B, Davidson SJ, Augustine J, Schuur JD, et al. Emergency Department Operations Dictionary: Results of the Second Performance Measures and Benchmarking Summit. Acad Emerg Med. 2011 May;18(5):539-44

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

State Board of Medicine Regulation of Non-Physician Practitioners Practicing Medicine

Originally approved April 2023

The American College of Emergency Physicians (ACEP):

- advocates that physicians and non-physician practitioners who engage in the practice of medicine should be licensed and regulated by state medical licensing and regulatory boards;
- supports that physician assistants should be licensed and regulated under the oversight of state medical licensing and regulatory boards;
- opposes legislative efforts to establish autonomous regulatory boards meant to license and regulate physician assistants outside of state medical licensing and regulatory boards' authority and purview; and
- supports that certified nurse practitioners, certified registered nurse anesthetists certified nurse midwives, and clinical nurse specialists should be licensed and regulated jointly by state medical and nursing boards.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2023

State Medical Board Peer Review

Revised October 2023

Originally approved October 2017

The American College of Emergency Physicians (ACEP) affirms that peer review of emergency medicine practice by any entity including state licensing boards should be performed by a physician who is currently licensed in a state, territory or area constituting legal jurisdiction of the US as a doctor of medicine or osteopathic medicine; be certified by a recognized certifying body in emergency medicine[1] and be in active clinical practice of emergency medicine in the same or similar circumstance for at least five years immediately preceding the date of the occurrence giving rise to the review.

[1]American College of Emergency Physicians. ACEP Recognized Certifying Bodies in Emergency Medicine (policy statement). Approved by the Board of Directors April 2023

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Strangulation and Neck Compression

Originally approved October 2021

The American College of Emergency Physicians (ACEP) recognizes that strangulation, the act of neck compression in any context, can cause serious injuries and significant morbidity and mortality, especially to victims of intimate partner and sexual violence, child and elder abuse, and interpersonal, non-malicious martial arts and policing tactics as well as intentional hanging and self-strangulation.

ACEP recommends that:

- Emergency physicians and emergency departments assess all victims of intimate partner and sexual violence, child and elder maltreatment and neglect for strangulation injuries.

- Emergency physicians and emergency departments maintain familiarity with the signs and symptoms of strangulation and have evidence-informed guidelines for the evaluation and management of patients who experience these signs and symptoms in this context.

- Emergency medical services, medical schools, and emergency medicine residency curricula should include education and training in the recognition, assessment, and interventions for strangulation injuries.

- Hospitals and emergency departments are encouraged to participate in collaborative interdisciplinary approaches for the assessment, safety planning, and interventions for patients assaulted by strangulation, especially those who are victims of intimate partner and sexual violence, child and elder abuse, and interpersonal violence. These approaches include the development of policies, protocols, and relationships with outside agencies that oversee the management and investigation of these types of violence.

- Emergency physicians and emergency departments are encouraged to better understand the partially hidden epidemiology of strangulation, as well as evidence-based approaches to accurate assessment, appropriate radiographic imaging, and effective intervention for victims.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2017

Sub-dissociative Dose Ketamine for Analgesia

Approved by the Emergency Nurses Association January 2018

Approved by the Society of Emergency Medicine Physician Assistants December 2017

Approved October 2017

As an adjunct to this policy, ACEP has prepared a Policy Resource and Education Paper (PREP) titled, "Sub-dissociative Dose Ketamine for Analgesia"

A joint policy statement of the American College of Emergency Physicians, the Emergency Nurses Association, and the Society of Emergency Medicine Physician Assistants

Sub-dissociative dose ketamine (SDK), also referred to as low dose ketamine (LDK) is safe and effective for analgesic use in emergency departments. SDK is one "opioid sparing" modality. Benefits of SDK over opioids and other common analgesics include, improved pain relief, less respiratory depression, and maintenance of cardiac output. Emergency care providers should disclose to patients that SDK administration may trigger generally minor transient side effects, including nausea and temporary dysphoria.

As with any analgesic, observation and assessment of the patient's response to SDK is indicated. Due to SDK's excellent safety profile and activity as an analgesic, not an anesthetic, special administration procedures and/or monitoring are not required. SDK may be safely ordered and/or administered by emergency care providers under the same policies and procedures as other typical analgesics.

FOR REFERENCE:

American College of Emergency Physicians. "Optimizing the Treatment of Acute Pain in the Emergency Department." Policy Statement. Approved April 2017.

From ACEP Policy on Optimizing the Treatment of Acute Pain in the Emergency Department, April 2017

> Administration of sub-dissociative dose ketamine (SDK) may be used either alone or as part of a multimodal approach to pain relief for traumatic and non-traumatic pain. Emergency care providers should disclose to patients that SDK administration may trigger generally minor, transient side effects. Administration of sub-dissociative ketamine should commence under the same procedures and policies as other analgesic agents administered by the nursing staff in the ED setting.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Support for National Disaster Medical System and Other Response Teams

Revised June 2019, June 2013 with current title, October 2006

Originally approved March 1999 replacing CR056 approved September 1985 and CR019 approved October 1991

The American College of Emergency Physicians (ACEP) believes that every community needs a comprehensive plan for immediate emergency medical care in case its medical care system is overwhelmed or rendered ineffective in a disaster. As a component of this plan, ACEP supports the National Disaster Medical System (NDMS) and encourages further development and funding of the program. ACEP also supports its members who participate in the Disaster Medical Assistance Teams (DMAT), Urban Search and Rescue (USAR teams**,** or other federal or state-sponsored medical teams. ACEP encourages entities such as health care facilities/systems and EMS services and employers such as medical practice groups to allow, encourage, and support their employees to participate.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Support for Nursing Mothers

Revised February 2020

Originally approved October 2013

The American College of Emergency Physicians (ACEP) supports breastfeeding mothers for the health and wellness of mother and baby. ACEP encourages a culture of support surrounding the nursing mother.

ACEP endorses the availability of a sanitary, private, non-bathroom area for breastfeeding emergency department employees, nurses, trainees, residents, and physicians to express breast milk during their workday inside or directly proximal to the emergency department. All necessary facilities should be present within the designated area, including but not limited to, functioning electrical outlets, a surface for equipment placement, and seating area. A nearby sink and refrigerator is encouraged, ideally within the area or directly proximal. Other equipment useful to maintain productivity of the mother while breast pumping would include a computer and telephone. Adequate time should be given to enable a breastfeeding mother to express milk. Breastfeeding mothers generally require pumping sessions every 4-6 hours for 20-30 minutes to maintain milk supply. Efforts should be made by other emergency department staff to support the nursing mother during these sessions.

ACEP also supports the education of emergency department provider employers and hospitals on the benefits of breastfeeding support in the workplace for infants, mothers, and the business of emergency medicine.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

Supporting Political Advocacy in the Emergency Department

Revised June 2019

Originally approved October 2013 from CR47

Physicians should be free to exercise their personal and professional judgment in voting, speaking, and advocating on any matter regarding patient care interests, the profession, health care in the community, and the independent exercise of medical judgment. Physicians should not be deemed in breach of their employment agreements, nor be retaliated against by their employers, for asserting these interests.*

*This statement was originally published in the American Medical Association's 2012 Principles for Physician Employment.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

Tactical Emergency Medicine Support

Revised February 2018

Reaffirmed October 2012

Originally approved by the ACEP Board of Directors June 2004

The American College of Emergency Physicians (ACEP) believes that Tactical Emergency Medical Support (TEMS) is an essential component of military and tactical law enforcement teams. As an integral part of a tactical unit, TEMS helps maintain a healthy and safer environment for both law enforcement and the public. This unique subspecialty provides emergency care under extreme and potentially dangerous situations. Excellent management of injuries sustained during training or deployment requires proficiency in wound care, hazardous materials exposure, and evidence preservation. TEMS providers can provide medical insight during training, mission planning, and deployment of tactical teams.

ACEP encourages:

- Establishment of funding sources sufficient to provide the necessary personnel, equipment, and training for TEMS providers at the local, state, and federal levels.
- Appropriate professional liability protection for TEMS providers.
- Establishment of clinical care standards specific to tactical medicine through evidence- based research and proven methods.
- Participation in recognized evidence-based training programs.
- TEMS programs should have dedicated medical oversight by an experienced and tactically trained board-certified physician working collaboratively with emergency medicine and EMS-boarded experts.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Telehealth Inclusion

Originally approved January 2021

Emergency medicine telehealth is defined as "the process of remotely caring for patients with acute illness, injury, and exacerbations of chronic diseases, including the initial evaluation diagnosis, treatment, prevention, coordination of care, disposition, and public health impact of any patient requiring expeditious care irrespective of a prior relationship."[1] The American College of Emergency Physicians (ACEP) policy statement "Definition of Emergency Medicine" states "Emergency medicine is not defined by location but may be practiced in a variety of settings including hospital-based and freestanding emergency departments (EDs), urgent care clinics, observation medicine units, emergency medical response vehicles, at disaster sites, or via telehealth."[2]

All existing ACEP policy statements, where applicable, are also pertinent to the practice of emergency medicine delivered via telehealth.

American College of Emergency Physicians. Emergency Medicine Telehealth (policy statement). Revised February 2020. Originally approved January 2016.

American College of Emergency Physicians. Definition of Emergency Medicine. (policy statement). Revised January 2021, June 2015, April 2008, April 2001. Reaffirmed October 1998. Revised April 1994 with current title. Replaces the original policy statement adopted March 1986 titled "Definition of Emergency Medicine and the Emergency Physician".

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

The Care of Patients Under Crisis Standards of Care

Originally approved October 2021

The Covid-19 pandemic led to a renewal of the discussion and development of Crisis Standards of Care (CSC) protocols throughout the United States.[1] CSCs are implemented when a crisis results in a substantial change in the level of care that can be delivered.[2] As resource scarcity increases, the typical availability of "space, stuff, and staff" becomes limited, necessitating a transition of focus from individual patient-centered care to public health–based obligations to the community.[3] CSC guidelines aim to provide direction for navigating this conflict, typically through a focus on maximizing lives saved and/or life years saved. CSC policies provide concrete guidance for clinicians and institutions facing difficult decisions about who should receive scarce resources.[3]

In response to the 2009 H1N1 pandemic, the National Academies of Medicine (formerly the Institute of Medicine) released guidance for establishing CSC protocols for implementation during disaster events.[2] These recommendations are based on the ethical principles of fairness, duty to care, duty to steward resources, transparency, consistency, proportionality, and accountability.[2] In the intervening decade, several states established CSC guidelines, though there is variation in the manner in which these guidelines have been operationalized.[4]

During the COVID-19 pandemic, several versions of CSC were developed by states to provide guidelines with subsequent implementation by healthcare systems.[5,6]

As the frontline in current and future disasters, emergency medicine physicians, particularly those with an expertise in disaster medicine, should:

- Be involved in design, trial and implementation of CSC guidelines at the federal, state, and local level. CSC design should include standards of equity and transparency.[7]
- Support state legislatures and Congress who must provide liability protections and support services (physical and mental) for clinicians who are engaged in implementation of CSC guidelines.[6, 8]

- Serve as critical advisors to hospitals, health care systems and governmental agencies that should track the initiation of CSC and review their implementation to document maximum benefit and equity within an impacted community.

References

1. Hick JL, Hanfling D, Wynia MK, Pavia AT. Duty to Plan: Health Care, Crisis Standards of Care, and Novel Coronavirus SARS-CoV-2. Washington, DC; NAM Perspectives. Discussion paper. National Academy of Medicine. Washington, DC. 2020. 10.31478/202003b.
2. Altevogt BM, Stroud C, Hanson SL, Hanfling D, Gostin LO, eds. Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report. Institute of Medicine (US) Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations. Washington (DC): National Academies Press (US); 2009. https://www.nap.edu/catalog/12749/guidance-for-establishing-crisis-standards-of-care-for-use-in-disaster-situations. 10.17226/12749.
3. Berlinger N, Wynia M, Powell T, et al. Ethical Framework for Health Care Institutions Responding to Novel Coronavirus SARS-CoV-2 (COVID-19) Guidelines for Institutional Ethics Services Responding to Managing Uncertainty, Safeguarding Communities, Guiding Practice. Vol 2.; 2020. The Hastings Center. https://www.thehastingscenter.org/ethicalframeworkcovid19/.
4. D Romney, H Fox, S Carlson, D Bachmann, D O'Mathuna, N Kman. Allocation of Scarce Resources in a Pandemic: A Systematic Review of US State Crisis Standards of Care Documents. *Disaster Med Public Health Prep*. 2020;***:1-7. 10.1017/dmp.2020.101.32295662
5. https://bioethics.pitt.edu/covid-19-ethics-resources
6. Milliken, Aimee, Martha Jurchak, Nicholas Sadovnikoff, William B. Feldman, Sejal B. Shah, Mark Galluzzo, Judith Krempin, and Eric Goralnick. "Addressing challenges associated with operationalizing a crisis standards of care protocol for the Covid-19 pandemic." *NEJM Catalyst Innovations in Care Delivery* 1, no.4 (2020).
7. https://www.saem.org/docs/default-source/saem-documents/equity-in-crisis-standards-of-care-872020.pdf?sfvrsn=c0bd03fd_2
8. Koch, Valerie Gutmann. "Crisis Standards of Care and State Liability Shields." *San Diego L. Rev.* 57 (2020):973.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

The Clinical Practice of Emergency Medical Services Medicine

Reaffirmed June 2023

Originally approved October 2017, replacing the following rescinded/sunsetted policy statements:

- Discontinuing Resuscitation in the Out-of-Hospital Setting (1997-2017)
- Early Defibrillation Programs (1998-2017)
- Implementation of EMS Interventions (1992-2017)
- Out-of-Hospital 12-Lead ECG (1999-2017)
- Out-of-Hospital Severe Hemorrhage Control (2014)
- Out-of-Hospital Use of Analgesia and Sedation (2015)

The American College of Emergency Physicians (ACEP) considers Emergency Medical Services (EMS) a practice of medicine, reaffirms its commitment to evidence-based decisions in practices of medicine, and supports the following principles:

- Clinical standards of care (including treatments that can be provided by laypersons prior to EMS arrival) developed, established, and promulgated by EMS physician medical directors should be based upon peer-reviewed, published, evidence-based treatments and outcomes. Where such supported treatments and outcomes do not exist, expert consensus statements should substantially form the basis for clinical standards of care.

- Clinically-related research initiatives involving EMS systems and providers should be encouraged and supported, with careful adherence to the ethical and legal principles of human subjects protection.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

The Management of Children and Youth with Pediatric Mental and Behavioral Health Emergencies

Revised January 2022 with current title, September 2018 titled "Pediatric Mental Health Emergencies in the Emergency Department"

Reaffirmed April 2012

Originally approved April 2006 titled "Pediatric Mental Health Emergencies in the Emergency Medical Services System"

A joint policy statement of the American College of Emergency Physicians, American Academy of Pediatrics, and Emergency Nurses Association

Available online at
https://www.annemergmed.com/article/S0196-0644(23)00431-6/fulltext

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

The Patient-Centered Medical Home Model

Revised April 2021,
April 2015

Originally approved
August 2008

The American College of Emergency Physicians (ACEP) supports the concept of the patient-centered medical home (PCMH) which advocates access to a personal physician, the primary care physician (PCP), for all patients, to optimize health and reduce costs with the understanding that they must have access to high quality emergency medical care. ACEP believes that emergency medicine is an integral part of the PCMH. Patients should have ready access to their PCP; however, unrestricted access to emergency medical services is necessary whenever the PCP is unable to meet their patient's needs, or the patient perceives a need for emergency care. All persons belonging to a PCMH must be allowed access to emergency medical care according to the prudent layperson standard.[1,2]

The PCMH is based on principles which were issued in March 2007 by the American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Physicians (ACP), and the American Osteopathic Association (AOA).[3,4] The Joint Commission has established a certification program for the PCMH which is based on the Agency for Healthcare Research and Quality's (AHRQ) definition of a medical home.[5,6] It envisions a health care delivery system in which patients have an ongoing relationship with a personal physician. The PCMH has gained support as an approach to health care reform, and its proponents contend that it will improve the health of patients, reduce costs, and can reduce emergency department (ED) utilization.[7,8]

ACEP believes a PCMH should:

1. **Provide patients timely access to a personal physician, the leader of a team of individuals who oversees the state of their health.**
   ACEP believes it would improve the health of our nation if every person had timely access to a PCP who provided the longitudinal care necessary for health maintenance and treatment of ambulatory care-sensitive conditions (ACSCs).

2. **Ensure patients have the freedom to select specialists of their choosing and access emergency medical care when they feel they need it.**
   Patients must not be restricted from access to medically appropriate tests and specialist consultations. Of utmost importance is that all patients have access

to emergency medical care according to the prudent layperson standard when they believe they have an emergency, and they should not be penalized if subsequent evaluation determines there was no serious medical diagnosis.

3. **Recognize the safety-net role of emergency medicine.**
Resources used to fund the PCMH should not compromise the emergency medical care system. Regardless of the anticipated benefits from having a PCMH, there will still be millions of Americans who experience sudden onset of life-threatening illness and injury for which they will need access to emergency care. There will be instances in which the PCP cannot see their patients expeditiously, requiring the PCMH to offer unscheduled access. The PCMH must be integrated with sources of acute care so that its patients who present with conditions such as chest pain, abdominal pain, suspected stroke, or other acute illness or injury receive an expeditious and efficient evaluation. Often an ED will be the most effective modality in these circumstances.

Furthermore, patients often seek treatment of ACSCs in the ED as an alternative to scheduled primary care.[9] Though these patients should have a PCP or seek treatment from their PCP, the reality is that many do not.[10,11] Many such patients prefer the ED because of its ubiquitous availability, willingness to see them regardless of ability to pay, and the trust they place in the ED.[12] Given that so many Americans depend on the ED as their place of first resort, the importance of emergency medicine to the health maintenance of our population must be acknowledged.

1. American College of Emergency Physicians. EMTALA and Prudent Layperson Standard FAQ. https://www.acep.org/administration/reimbursement/reimbursement-faqs/emtala-and-prudent-layperson-standard-faq/. Accessed February 2021.
2. Legal Information Institute. 29 CFR § 2590.715-2719A - Patient protections. https://www.law.cornell.edu/cfr/text/29/2590.715-2719A. Accessed February 2021.
3. American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association. Joint Principles of the Patient-Centered Medical Home. March 2007. https://www.acponline.org/acp_policy/policies/joint_principles_pcmh_2007.pdf. .
4. Robert Graham Center. The Patient Centered Medical Home History, Seven Core Features, Evidence and Transformational Change. November 2007. https://www.aafp.org/dam/AAFP/documents/about_us/initiatives/PCMH.pdf. Accessed February 2021.
5. AHRQ PCMH Resource Center. Defining the PCMH. AHRQ, US Department of Health & Human Services, Patient Centered Medical Home. https://pcmh.ahrq.gov/page/defining-pcmh. Accessed February 2021.
6. The Joint Commission. The Joint Commission Primary Care Medical Home Certification Program. https://www.jointcommission.org/accreditation-and-certification/certification/certifications-by-setting/hospital-certifications/primary-care-medical-home-certification/. Accessed February 2021.
7. Chu L-H, Tu M, Lee Y-C, et al. The impact of patient-centered medical homes on safety net clinics. *Am J Manag Care*. 2016;22(87):532-538.
8. David G, Gunnarsson C, Saynisch PA, et al. Do patient-centered medical homes reduce emergency department visits? *Heal Serv Res*. 2015;50(2):418-439. doi:10.1111/1475-6773.12218
9. Capp R, Camp-Binford M, Sobolewski S, et al. Do adult Medicaid enrollees prefer going to their primary care provider's clinic rather than emergency department (ED) for low acuity conditions? *Med Care*. 2015;53(6):530-533. doi:10.1097/MLR.0000000000000364
10. Janke AT, Brody AM, Overbeek DL, et al. Access to care issues and the role of EDs in the wake of the Affordable Care Act. *Am J Emerg Med*. 2015;33(2):181-185. doi:10.1016/j.ajem.2014.11.006
11. Marco CA, Weiner M, Ream SL, et al. Access to care among emergency department patients. *Emerg Med J*. 2012;29(1):28-31. doi:10.1136/emj.2010.103077
12. Ragin DF, Hwang U, Cydulka RK, et al. Reasons for using the emergency department: Results of the EMPATH Study. *Acad Emerg Med*. 2005;12(12):1158-1166. doi:10.1197/j.aem.2005.06.030

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2018

The Role of Emergency Physicians in Emergency Medical Services for Children

Reaffirmed February 2018, April 2012, and October 2006

Originally approved March 2000

The American College of Emergency Physicians believes emergency physicians, as leaders in emergency medical services (EMS), have a pivotal role in the integration of emergency medical services for children (EMSC). Emergency physicians impact the EMS-EMSC continuum in important ways by providing:

- Leadership in the area of injury and illness prevention.
- Leadership in local, regional, and state EMS and EMSC systems by involvement in the provision of medical direction (oversight), education for providers, quality improvement, and legislative advocacy.
- Collaboration with other physicians and health care professionals to enhance the medical home for children, including referral to primary care, specialized care, and rehabilitation services.
- Research in the design and function of EMS systems, education of providers, out-of-hospital and emergency care interventions, and outcomes of emergency care.
- Expertise for and collaborate with the National EMSC Program (Maternal and Child Health Bureau in collaboration with the National Highway Traffic Safety Administration).

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Revised October 2019

The Role of Emergency Physicians in the Care of Children

Revised October 2019

Reaffirmed June 2013, October 2007

Revised June 2001

Approved January 1996

Rescinded June 1995

Originally approved September 1989

Emergency physicians treat the majority of acutely ill and injured children who seek emergency care in the United States.

By virtue of their training and experience, emergency physicians are qualified and are comfortable with providing initial stabilization and treatment of pediatric emergencies. Ongoing education, practice, and pediatric readiness are critical in maintaining skills and qualifications.

In this capacity, emergency physicians:

- Advocate for emergency preparedness that is pediatric-specific and ensure that equipment, provider education, staffing, policies and procedures, and environmental designs address the unique needs of pediatric patients in each community.
- Ensure quality and family-centered patient care in accordance with the ACEP policy on patient- and family- centered care and the role of the emergency physician providing care to a child in the emergency department (https://www.acep.org/globalassets/new-pdfs/policy-statements/patient--and-fam-centered-care-role-of-ep-prov-care-to-child.pdf). This can be accomplished through:
  - Optimizing collaboration and communication between acute care providers and the primary care providers;
  - Optimizing access to facilities, specialists, equipment and staffing;
  - Promoting education for professionals, staff, and the public related to pediatric acute care issues and the prevention of injury and illness.
- Educate staff on the importance of family presence during procedures and resuscitations in the emergency department.
- Promote injury and illness prevention for children, parents, and their community.
- Promote pediatric readiness in the emergency department. For more information, refer to the policy statement on pediatric readiness in the emergency department. (https://acep.org/globalassets/new-pdfs/policy-statements/pediatric-readiness-in-the-emergency-department.pdf)

- Collaborate with local, regional or national organizations to advocate for safety and care of the pediatric patient
- Promote the understanding of the concept of "System of Care", including payors, providers, technology, community, and family.
- Advocate for health equity in the care of all children and raise awareness for social factors that contribute to health outcomes such as abuse, neglect, food insecurity, housing insecurity and mental health care.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2019

The Role of Emergency Physicians in the Completion of Death Certificates

Originally approved June 2019

An emergency physician is often the last physician to see a patient alive or the first to bear witness to their death. In most cases, the encounter in question is the emergency physician's first with the patient, and his or her knowledge of the patient may be limited depending on the circumstances of the death, the availability of medical records for the patient at the institution in question, and the presence and availability of relatives, as well as their knowledge (or lack thereof) of the decedent's medical history.

Some cases, saliently those involving trauma, suspicious circumstances, substance use, or recent office-based surgery, among others, may be processed via the local medical examiner's or coroner's office. There are laws defining the types of cases that must be investigated by a coroner or medical examiner in most jurisdictions in the United States; in some jurisdictions, cases of decedents who do not have an "attending physician" may also be referred to the medical examiner. A common definition of "attending physician" is a (post-training) practicing doctor who has a formal relationship to a patient, either in-house while the patient is hospitalized or as a primary care provider in the community.

There are two distinct duties that are part of the death certification process, whether completed by a physician or coroner:

- Pronouncing the death (affirming that the individual died, including the date and time of death)
- Certifying the death (the manner and cause of death)

Manners of death include natural, accidental, homicide, suicide, or undetermined. Causes of death include immediate causes (eg, septic shock), intermediate causes (eg, multilobar pneumonia), and underlying causes that may have triggered the chain of events (eg, malnutrition). The approximate interval between the presumed onset of each of these conditions and the death is also recorded.

The American College of Emergency Physicians (ACEP) acknowledges that in many cases, including when patients expire just prior to, or during, an emergency department visit, the emergency physician is the ideal individual

to pronounce the death and document the pronouncement.

ACEP affirms that in cases where a patient has an existing, ongoing relationship with an "attending physician" such as a primary care provider, it is ideal for that individual to ***certify*** the cause and manner of death, rather than the emergency physician who may have pronounced it. If no such attending physician relationship exists, in some jurisdictions, cases may be referred to the coroner or medical examiner for certification of the cause and manner of death. Such referrals should include the date and time death was pronounced, and a description of the acute presentation and clinical findings in the emergency department. Alternatively, the emergency physician – or other hospital-based physician responsible for the patient's care at the time of death – may use available information and their clinical judgment to certify the death. ACEP maintains that any such physician who certifies the death to the best of their ability, shall be held harmless. If insufficient data exists to determine the cause of death, the emergency physician should not be compelled to provide that information.

ACEP recognizes that individual jurisdictions may have unique regulations in regard to the certification of death, that may include, but not be limited to, cases appropriate for referral to a coroner or medical examiner. Significant variations exist at the city, county, or state level. Emergency physicians should be cognizant of the relevant statutes that apply in the jurisdiction(s) where they practice and follow them appropriately.

ACEP believes that it is part of the health care team's responsibility to make reasonable efforts to patients and their families to ensure that the decedent's planned disposition, including burial or cremation, is not delayed unnecessarily.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved March 2024

The Role of the Legacy Emergency Physician in the 21st Century

Revised March 2024

Reaffirmed February 2018 and April 2012

Originally approved June 2006

The American College of Emergency Physicians (ACEP) believes that physicians who begin or began the practice of emergency medicine in the 21st century must have completed an American Council for Graduate Medical Education (ACGME)-accredited emergency medicine residency training program and be eligible for certification by the American Board of Emergency Medicine (ABEM) or American Osteopathic Board of Emergency Medicine (AOBEM).

ACEP acknowledges that emergency medicine's development and rapid growth resulted in a workforce that includes physicians who are not eligible for ABEM or AOBEM specialty certification. These legacy emergency physicians, many of whom are residency trained and/or board certified in other specialties, began the practice of emergency medicine prior to the 21st century.

ACEP acknowledges that legacy emergency physicians, by virtue of their primary training and emergency medicine practice experience, still play an important role in the current emergency medicine workforce and patient care safety net.

ACEP believes that the quality of care delivered by legacy emergency physicians should be a primary determinant of their hospital privileges and credentialing. Legacy emergency physicians should be subject to the same quality standards as ABEM/AOBEM certified emergency physicians. Legacy emergency physicians should not be forced out of the workforce solely on the basis of their board certification status.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

The Role of the Physician Medical Director in Emergency Medical Services Leadership

Revised June 2023

Originally approved October 2017, replacing the following rescinded/sunsetted policy statements:

- Leadership in Emergency Medical Services (1995-2017)
- Medical Direction for Staffing of Ambulances (1999-2017)
- Medical Direction of Emergency Medical Services" (1984-2017)
- Physician Medical Direction of Emergency Medical Services Dispatch Programs" (1998-2017)
- Professional Liability Insurance for EMS Medical Control Activities" (1985-2017)

The American College of Emergency Physicians (ACEP) considers emergency medical services (EMS) a practice of medicine requiring physician oversight, reaffirms its commitment to physician medical director leadership in EMS, and supports the following principles:

- EMS physician medical directors should be intricately familiar and conversant with all relevant aspects of affiliated EMS systems that relate to patient safety and outcomes. The gold standard to lead an EMS system in the role of physician medical director is an emergency physician who is certified (or eligible to be certified) by the American Board of Emergency Medicine or the American Osteopathic Board of Emergency Medicine in emergency medical services.

- EMS physician medical directors should actively direct and lead the clinical performance in an EMS system, serving with recognized ultimate clinical authority.

- EMS physician medical directors should actively guide and direct EMS system design that is based on evidence-supported clinical practices and outcomes.

- EMS physician medical directors should actively direct and oversee the operation of EMS systems communications, establishing or modifying dispatch training, protocols, and credentialing programs that serve in determining initial and ongoing dispatch privileges for communications specialists. Emergency communications comprise an integral component of patient care and therefore are clinical functions.

- EMS physician medical directors should actively direct and oversee credentialing programs that serve in determining initial and ongoing clinical privileges for individual providers in an EMS system. The EMS physician medical director must have authority to immediately withdraw clinical privileges as part of a due process structure if an EMS professional poses potential imminent threat to patient safety and welfare.

- EMS physician medical directors should actively direct and oversee continuous quality improvement programs based on evidence-supported practices and outcomes, so as to critically appraise and advance the quality of clinical performance in an EMS system.

- EMS physician medical directors should actively participate and advocate in development of engaging, evidence-supported education for EMS providers, including communication specialists.

- EMS physician medical directors should actively advise and guide the development of certification and scope of practice policies affecting EMS providers at local, state, and national levels.

- EMS physician medical directors should actively monitor and influence issues impacting EMS system funding, reimbursement, and government regulation.

- EMS physician medical directors should actively promote research initiatives involving EMS systems and providers, recognizing that pre-hospital research is an essential element in advancing evidence-based medicine within the practice of EMS medicine.

- EMS physician medical director leadership should be an integral part of pre-hospital research; thus, ACEP supports the further development of federal EMS grants that link distribution of funds for any EMS purpose with the end goal of enhancing the quality of care provided by an EMS system.

- Roles fulfilled by EMS physician medical directors, including responsibilities, authority, and reporting hierarchies, are to be formally established in writing in contractual agreements between EMS physician medical directors and EMS systems and/or applicable legal parties.

- EMS physician medical directors should advocate for the mental and physical welfare of patients and EMS professionals, including supporting patient safety initiatives and EMS systems designs that incorporate appropriate sleep/wake-work cycles and maximum duty hours.

- EMS systems have ethical responsibilities to provide EMS physician medical directors with the tangible resources and remuneration commensurate with the responsibilities and authorities fulfilled by EMS physician medical directors.

- EMS physician medical directors must have liability protection that covers the spectrum of their responsibilities and authorities. EMS systems have ethical, and in some jurisdictions, legal responsibilities to provide this liability protection to EMS physician medical directors. Medical malpractice policies will typically cover traditional clinical aspects in the practice of EMS medicine, though EMS physician medical directors should always formally verify such coverage with applicable carrier(s). Essential administrative actions of EMS physician medical directors can be subject to claims outside of medical malpractice policies. An insurance policy, often referred to as a directors and officers policy (D&O policy), must be enacted for proper protection of EMS physician medical directors if the applicable traditional medical malpractice policy does not specifically cover the range of essential administrative actions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Third-Party Payers and Emergency Medical Care

Revised October 2020, April 2014, June 2007 with current title, July 2000, January 1999 titled "Managed Health Care Organizations and Emergency Care", March 1993

Originally approved September 1987 titled "Managed Health Care Plans and Emergency Care"

The American College of Emergency Physicians (ACEP) believes that emergency medical care must be readily available to all persons requesting it regardless of their ability to pay or their health insurance status.

Individuals requesting medical care at an emergency department (ED) must be provided a medical screening examination (MSE) and any necessary stabilizing treatment as defined by federal law[1] and state law, as applicable. This requirement applies to all individuals and may not be superceded or pre-empted by any third-party payer policy or regulation.

Third-party payers[2] that actively practice demand management have a duty and responsibility to educate their members regarding emergency services, including appropriate access and use of emergency services, especially emergency medical services (EMS) 911 or other public emergency access telephone systems. All health care access information provided to members should clearly state that preauthorization for emergency care, as defined by the federal law and state law, as applicable, is not required. Any person who perceives that he or she is experiencing an emergency should call 911 without delay or go directly to the nearest ED without regard to the facility being in or out of network.

Emergency physicians should assume an active role in working with third-party payers to ensure that third-party payers do not interfere with the prompt availability and delivery of emergency services. Only appropriately qualified medical professionals, such as managed care organizations (MCO) medical advice line, participating physicians' offices, and demand management organizations, should respond to patient calls concerning the need for medical care. Such medical professionals should be specifically trained in history-taking, clinical judgment and assessment skills, triage categorization, liability issues, and appropriate utilization of the decision support tools. Triage decisions should be based on sound medical protocols under the policy direction and responsibility of a qualified physician. This physician should have the authority to implement and enforce these protocols as well as the authority to direct any necessary deviation from written protocols.

Innovative initiatives that are intended to direct patients to the most appropriate site of care should be done with qualified emergency physician input to ensure quality emergency care exists in the appropriate setting.

Assessment protocols and advice policies affecting ED access should be developed with emergency physician input and should address both adult and pediatric patients. The policies should address access to appropriate levels of service in appropriate time frames. Assessment protocols and advice policies should be subject to ongoing performance review to confirm validity.

ACEP Recommendations

To ensure access to emergency medical care by all individuals and to provide guidelines for emergency physicians when communicating with third-party payers, ACEP recommends the following:

- Emergency ambulance transportation to EDs, including transports by privately contracted ambulances, must be integrated into the local emergency medical services (EMS) systems.
- Copays and deductibles should not differ for in- or out-of-network care in the ED, and copays should not be so high as to circumvent the intent of the prudent layperson standard or potentially delay care in the event of a bonified emergency.
- If third-party payers have a system for post-stabilization case management, it must be readily accessible at all times (24/7) and provide a means for contemporaneous consultation with a physician representative who has knowledge and experience in the care of ED patients. The ability to confirm insurance coverage and to utilize case management resources should be available promptly, with a single telephone call to a plan representative.
- All initiatives that are designed to triage patients to the most appropriate site of care should have the input and oversight of qualified emergency physicians.
- In the event of a disagreement regarding the need for post-stabilization care, hospitalization, or discharge, the emergency physician who is physically evaluating the patient has the final authority to determine disposition of the patient. If appropriate, the emergency physician may consider transfer of post-stabilization care to a payer-assigned physician or transfer to a payer-contracted facility as long as the Emergency Medical Treatment & Labor Act (EMTALA) transfer and stabilization requirements are met. All such transfer decisions require the consent of the patient or their designee.
- All patient transfers, including those involving MCO members, should be consistent with ACEPs published guidelines.
- Emergency physicians should be fairly reimbursed for all services provided, regardless of in- or out-of-network status, including the provision of mandated EMTALA-related care. Claims should be processed expeditiously and on the basis of established billing and coding procedures. Claims should be adjudicated on the basis of the patient's presenting complaint and symptoms. An equitable and timely appeal and arbitration process should exist for disputes involving reimbursement.
- Recognizing that on-call specialty services may provide simultaneous coverage to several hospitals, third-party payers are expected to cover on-call specialty services when emergency physicians require access to hospital on-call panels in order to meet MSE and stabilization expectations as required by EMTALA regardless of network status.

- Emergency physicians should assume an active, positive role in any contract negotiations involving healthcare institutions and payers, especially where emergency services are included as part of a comprehensive program of services.

References

1. The Emergency Medical Treatment & Labor Act (EMTALA), as established under the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 (42 USC 1395 dd), Section 9121, as amended by the Omnibus Budget Reconciliation Acts (OBRA) of 1987, 1989, and 1990. Rules and regulations published. Federal Register June 22, 1994; 59:32086-32127. Amended September 9, 2003; 68:53221-53264.
2. Third-party payers include: Medicare, Medicaid, managed care organizations, indemnity insurers, and businesses that contract for services

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Transfer of Patient Care Between EMS Providers and Receiving Facilities

Reaffirmed January 2019

Originally approved October 2013

The American College of Emergency Physicians (ACEP), Emergency Nurses Association (ENA), National Association of EMS Physicians (NAEMSP), National Association of Emergency Medical Technicians (NAEMT), and National Association of State EMS Officials (NASEMSO) believe that clearly defined processes for the contemporaneous face-to-face communication of key information from emergency medical services (EMS) providers to health care providers in an emergency department (ED) are critical to improving patient safety, reducing medicolegal risk, and integrating EMS with the health care system. It is critical that patient information is exchanged verbally during the transfer of care, but verbal information alone may lead to inaccurate and incomplete documentation of information and inadequate availability of information to subsequent treating providers (in both the ED and inpatient units) who are not present at the time of verbal communication.

The following principles are important to ensuring safe patient hand-off from EMS to health care providers at receiving facilities:

- In addition to a verbal report from EMS providers, the minimum key information required for patient care must be provided in written or electronic form at the time of transfer of patient care. This provides physicians and other health care providers who deliver subsequent care for the patient to receive this information more accurately and avoid potential errors inherent with second-hand information. The minimum key information reported at the time of hand-off must include information that is required for optimal care of the patient – examples include vital signs, treatment interventions, and the time of symptom onset for time-sensitive illnesses.

- All members of the health care team, including EMS providers, nurses, and physicians, must communicate with mutual respect for each other and respect the verbal and written communication from EMS as an important

part of the patient's history. During the transfer of patient care, the receiving health care providers should have an opportunity to ask questions to clarify information that is exchanged.

- Health care facilities should attempt to receive patient care transfer reports in a timely manner, facilitating the return of EMS units to service.

- EMS transfer of care documentation should be treated as part of the health care record and must be professional, accurate, and consistent with information included in the final complete electronic or written EMS patient care report. Hospital systems should preserve written transfer of care documentation in the patient's permanent medical record.

- Copies of all results of medical tests performed by EMS providers (eg 12-lead ECGs, results of blood chemistry testing, any medical imaging, etc.) must be available to the receiving facility with the EMS transfer-of-care documentation.

- Developers of electronic EMS patient care reports and health information exchanges should develop products that efficiently provide real-time digital transfer and preservation of the transfer-of-care documentation into the patient medical record.

- In addition to the information exchanged contemporaneously at the time of transfer of patient care, the complete EMS patient care report must be available to the receiving facility within a clinically relevant period of time.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Transition of Care for Emergency Department Patients

Revised April 2021 with current title, June 2014 titled "Deferral of Care After Medical Screening of Emergency Department Patients", January 2007

Originally approved April 2006 titled "Medical Screening of Emergency Department Patients"

The American College of Emergency Physicians (ACEP) believes that every patient who seeks care in the emergency department (ED) should receive appropriate and necessary medical care. While this care should ideally be provided in the ED, ACEP recognizes that in some circumstances, completion of care or definitive care may appropriately be transitioned and provided in a less acute alternative setting. Hospitals that choose to employ transitions of care from the ED must ensure that there are strict safeguards to protect such patients and ensure that transition of care is appropriate and safe.

Transition of care should, at a minimum, include the following:

- The patient must receive an appropriate medical screening examination (MSE) by physician or qualified medical personnel approved by the hospital governing body in accordance with the Emergency Medical Treatment and Labor Act (EMTALA).
- The physician or qualified medical personnel must determine that completion of care can be safely, transitioned to an alternate setting in accordance with standards adopted by the hospital, for timely and appropriate treatment.
- It is determined within reasonable medical certainty that transition of care is not likely to result in significant deterioration of the patient's medical condition or increased risk to the community.
- Determination by the hospital, in advance of any transition of care, that:
  1. At least one appropriate alternative setting with a physician, physician assistant or nurse practitioner are available such that the patient can obtain timely, continued evaluation and treatment, regardless of the patient's ability to pay.
  2. The patient will be able to directly transition and/or receive a timely appointment in the defined alternative setting.
- Transition of care from the ED has significant risks for patients and physicians. ACEP strongly opposes transition of care for patients presenting to the ED unless absolutely necessary.

Emergency departments using transition of care processes should have emergency physicians involved in the development of the process to ensure safe

patient care and appropriate disposition. Emergency physicians should not be compelled to participate in transition of care unless the safeguards, detailed in this policy are followed.

Hospitals must acknowledge emergency physicians' responsibility for the care of patients in the ED created by the physician-patient relationship and must honor their autonomy to determine appropriate care to address the patient's emergency as defined by the prudent layperson standard.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2018

Trauma Care Systems

Revised April 2018 with current title and April 2012

Reaffirmed September 2005

Revised titled, "Trauma Care Systems Development, Evaluation and Funding" January 1999

Originally approved titled, "Trauma Care Systems Development and Evaluation" June 1998

Integrated, evidence-based trauma care systems reduce injury-related morbidity and mortality while simultaneously saving costs, both directly in healthcare dollars and indirectly in societal impact. The American College of Emergency Physicians (ACEP) supports the following principles related to the advancement of trauma care systems:

Federal and state legislation must support unrestricted access of acutely injured patients to an integrated trauma care system.

Trauma care systems must have robust continuous quality improvement programs to gather clinically meaningful data in order to optimally improve future patient care and outcomes.

Injury related databanks are most useful to injury prevention and intervention when incorporating information across all phases of care, from point of injury through rehabilitation and recovery. Databanks allow researchers to define emerging injury types, identify and assess injury prevention strategies, elucidate optimal acute care interventions, and measure rehabilitation outcomes. These databank-derived answers further serve to promote effective allocation of system financing and resources.

ACEP and its members, in collaboration with other key stakeholders, must provide a leadership role in injury prevention, acute injury care, injury research, and trauma care systems advocacy.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2021

Travel Screening of Pediatric Patients for International Travel, High Risk Areas, and Isolation

Originally approved October 2021

International travel is common among all age groups. Many patients lack adequate primary care or access to specialized pre-travel consultations and may seek pre-travel counseling in the emergency department (ED). This policy statement is to help guide emergency physicians in this situation but should not be interpreted as mandating travel screening or making it the standard of care for emergency physicians to provide this care.

Only half of all children and a minority of children visiting family seek out pre-travel consultation and advice from any source. Children visiting family are a group that is at the highest risk for contracting travel related diseases for a variety of epidemiological reasons. As this represents an opportunity to mitigate risks associated with travel and to promote the health and safety of vulnerable children, the American College of Emergency Physicians (ACEP) supports the ability, but not the requirement, of emergency physicians to provide targeted pre-travel screening and resources to pediatric patients in the ED.

Risk assessment should include a discussion of planned travel-related activities and should take into account age-specific needs. Key areas to consider include infection prevention and prophylaxis, as well as vehicle and water safety. Routine vaccinations should be emphasized in addition to referrals for specialized travel vaccines.

Targeted emergency department pre-travel screening should not replace a comprehensive pre-travel evaluation, and families planning high-risk travel should be referred to specialized travel medicine services whenever feasible. Emergency physicians are encouraged to familiarize themselves with local resources for vaccination and prophylaxis and to have information for appropriate specialty travel medicine centers for referral when needed. As travel guidelines to specific countries can change, reference to the CDC Yellow Book is encouraged: https://wwwnc.cdc.gov/travel/yellowbook/2020/family-travel/traveling-safely-with-infants-and-children.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Treatment of Family, Friends, Colleagues, and Self

Originally approved April 2020

Emergency physicians may be asked to provide medical treatment for people with whom they have significant personal relationships, including family members, close friends, and professional colleagues. They may also consider treating their own illnesses or injuries. Multiple commentators advise against providing treatment in these circumstances, arguing that combining personal and therapeutic relationships can undermine the quality of care and pose significant risks of harm to both patients and physicians. Commonly cited concerns include:

- Compromised objectivity in diagnosis and treatment when physicians have a strong personal or emotional stake in patient outcomes.
- Reluctance of physicians to inquire about, and of patients to disclose, sensitive or embarrassing health information to family, friends, or colleagues.
- Reluctance of physicians to disclose bad news to family, friends, or colleagues.
- Patient discomfort with the loss of personal privacy during physical examinations and treatment by a family member, close friend, or professional colleague, and physician reluctance to perform a thorough physical examination in order to protect the patient's privacy.
- Reduced autonomy, when physicians are reluctant to decline to treat a family member, friend, or colleague, and when patients are reluctant to refuse treatment by a family member, friend, or colleague.
- Damage to valuable personal relationships as a consequence of a difficult course of treatment or a poor treatment outcome.

In view of these important concerns, the American College of Emergency Physicians (ACEP) recommends that emergency physicians refrain from providing medical treatment for family members, close friends, professional colleagues, and themselves, except in several limited and specific circumstances. Circumstances in which emergency physicians may or should treat family members, close friends, professional colleagues, and themselves include:

- Medical care for emergency conditions or in isolated geographic settings, when no other qualified physician is available.
- Short-term treatment of minor illnesses or injuries.
- Situations in which health care professionals present to an emergency department or other treatment setting with a request for treatment from emergency physicians who are their colleagues (provided that the requested treatment is within the emergency physician's skill set).

ACEP recognizes that statutes and medical licensure board policies in many US states restrict or prohibit some forms of treatment of family members, friends, or self. Emergency physicians should, therefore, familiarize themselves with the applicable laws and policies on this issue in their own jurisdictions.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2017

Triage Scale Standardization

Approved by the Emergency Nurses Association September 2017

Approved January 2017

Originally approved June 2010

A joint policy statement of the American College of Emergency Physicians and the Emergency Nurses Association

The American College of Emergency Physicians (ACEP) believes that the quality of patient care benefits from implementing a standardized emergency department (ED) triage scale and acuity categorization process. Based on expert consensus of currently available evidence, ACEP and ENA support the adoption of a scientifically validated triage scale such as the Emergency Severity Index (ESI). These organizations also support continued research and investigation to further refine patient acuity assignment, especially for high-risk populations.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2021

Ultrasound-Guided Nerve Blocks

Originally approved April 2021

The American College of Emergency Physicians (ACEP) has developed this policy to assist physicians performing ultrasound-guided nerve blocks (UGNBs) in the emergency department (ED). Pain is one of the most frequently encountered complaints in the ED.[1-3] Many modalities are used for pain relief in the ED including opioid medications, non-opioid medications, and nonpharmacologic interventions. In light of the opioid epidemic, interest in non-narcotic pain control has increased.[4]

Currently, ultrasound-guided procedural skills are largely incorporated within the ACEP guidelines on point-of-care ultrasound (POCUS).[5] Given the severity of the opioid epidemic, and in order to provide patients with the safest and most efficacious analgesia, it is the position of ACEP that UGNBs are a core skill[6] which emergency physicians are capable of providing to patients. ACEP supports the use of UGNBs to treat pain within the ED and the credentialing of emergency physicians to perform UGNBs within hospitals.

UGNBs can greatly benefit patients presenting in pain to the ED and should be considered a core component of a multimodal pain pathway. Current literature demonstrates UGNBs can be used for pre-procedural analgesia prior to orthopedic reduction/splinting, complex laceration repair, abscess incision and drainage, or for acute on chronic painful conditions.[7-16] UGNBs have been associated with improved post-surgical functional outcomes, decreased delirium, and decreased length of stay during patients' hospital stays without any appreciated increase in adverse events.[17-22] Additionally, the American College of Surgeons recently released guidelines on the management of acute pain in trauma patients, endorsing the use of UGNBs as part of an opioid sparing best practice strategy for care.[23]

Ultrasound guidance improves efficacy, efficiency, and safety when compared to the blind approach.[24-26] UGNBs offer patient-centered benefits while avoiding dangerous adverse side effects encountered with opioid medications, non-opioid adjuncts and procedural sedation.[27-28]

It is the position of ACEP that UGNBs are not only within the scope of practice of emergency physicians,[6] but represent a core component of a multimodal pathway to control pain for patients in the ED.

References

1. McCaig LF Burt CW. National Hospital Ambulatory Medical Care Survey: 2003 Emergency Department Summary. Hyattsville, MD: National Center for Health Statistics; 2005.
2. Todd KH, Ducharme J, Choiniere M, et al. Pain in the emergency department: Results of the pain and emergency medicine initiative (PEMI) multicenter study. *J Pain*. 2007;8(6):460–6.
3. Godwin SA, Burton JH, Gerardo CJ, et al. Clinical policy: procedural sedation and analgesia in the emergency department. *Ann Emerg Med*. 2014;63(2):247-58.e18.
4. Chang AK, Bijur PE, Esses D, et al. Effect of a single dose of oral opioid and nonopioid analgesics on acute extremity pain in the emergency department: a randomized clinical trial. *JAMA*. 2017;318(17):1661–7. https://doi.org/10.1001/Jama.2017.16190
5. Ultrasound Guidelines: Emergency, Point-of-Care and Clinical Ultrasound Guidelines in Medicine. *Ann Emerg Med*. 2017;69(5):e27-e54. doi: 10.1016/j.annemergmed.2016.08.457. PMID: 28442101.
6. American College of Emergency Physicians. 2019 Model of the Clinical Practice of Emergency Medicine. [policy statement]. Approved June 2020. *J Emerg Med*. 2020 Jul;59(1):96-120.
7. Kettner SC, Willschke H, Marhofer P. Does regional anaesthesia really improve outcome? *Br J Anaesth*. 2011;107 Suppl 1:i90-5. doi: 10.1093/bja/aer340. PMID: 22156274.
8. Beaudoin FL, Haran JP, Liebmann O. A comparison of ultrasound-guided three-in-one femoral nerve block versus parenteral opioids alone for analgesia in emergency department patients with hip fractures: a randomized controlled trial. *Acad Emerg Med*. 2013;20(6):584-91. doi:10.1111/acem.12154
9. Herring AA, Stone MB, Nagdev AD. Ultrasound-guided abdominal wall nerve blocks in the ED. *Am J Emerg Med*. 2012;30(5):759-64.
10. Clattenburg E, Herring A, Hahn C, Johnson B, Nagdev A. ED ultrasound-guided posterior tibial nerve blocks for calcaneal fracture analgesia. *Am J Emerg Med*. 2016;34(6):1183.e1-1183.e3.
11. Lyons C, Herring AA. Ultrasound-guided axillary nerve block for ED incision and drainage of deltoid abscess. *Am J Emerg Med*. 2017;35(7):1032.e3-1032.e7.
12. Selame LA, McFadden K, Duggan NM, et al. Ultrasound-guided transgluteal sciatic nerve block for gluteal procedural analgesia. *J Emerg Med*. Published online December 2020:S0736467920311562.
13. Jaffe TA, Shokoohi H, Liteplo A, Goldsmith A. A novel application of ultrasound-guided interscalene anesthesia for proximal humeral fractures. *J Emerg Med*. 2020;59(2):265-9.
14. Goldsmith AJ, Liteplo AS, Shokoohi H. Ultrasound-guided serratus anterior plane block for intractable herpes zoster pain in the emergency department. *J Emerg Med*. 2020;59(3):409-12.
15. Goldsmith AJ, Liteplo A, Hayes BD, et al. Ultrasound-guided transgluteal sciatic nerve analgesia for refractory back pain in the ED. *Am J Emerg Med*. 2020;38(9):1792-5.
16. Morrison RS, Dickman E, Hwang U, et al. Regional Nerve Blocks Improve Pain and Functional Outcomes in Hip Fracture: A Randomized Controlled Trial. *J Am Geriatr Soc*. 2016;64(12):2433-9. doi:10.1111/jgs.14386
17. Blaivas M, Adhikari S, Lander L. A prospective comparison of procedural sedation and ultrasound-guided interscalene nerve block for shoulder reduction in the emergency department. *Acad Emerg Med*. 2011;18(9):922-7. doi:10.1111/j.1553-2712.2011.01140.x
18. Tezel O, Kaldirim U, Bilgic S, et al. A comparison of suprascapular nerve block and procedural sedation analgesia in shoulder dislocation reduction. *Am J Emerg Med*. 2014;32:549–552
19. Liu SS, Ngeow J, John RS. Evidence basis for ultrasound-guided block characteristics: onset, quality, and duration. *Reg Anesth Pain Med*. 2010 Mar-Apr;35(2 Suppl):S26-35. doi: 10.1097/AAP.0b013e3181d266f0. PMID: 20216022.
20. Kapral S, Greher M, Huber G, et al. Ultrasonographic guidance improves the success rate of interscalene brachial plexus blockade. *Reg Anesth Pain Med*. 2008;33(3):253-8. doi: 10.1016/j.rapm.2007.10.011. PMID: 18433677.
21. Neal JM, Brull R, Chan VW, et al. The ASRA evidence-based medicine assessment of ultrasound-guided regional anesthesia and pain medicine: Executive summary [published correction appears in Reg

Anesth Pain Med. 2010 May-Jun;35(2):325]. *Reg Anesth Pain Med*. 2010;35(2 Suppl):S1-S9. doi:10.1097/AAP.0b013e3181d22fe0
22. Bhoi S, Chandra A, Galwankar S. Ultrasound-guided nerve blocks in the emergency department. *J Emerg Trauma Shock*. 2010;3(1):82-8. doi:10.4103/0974-2700.58655
23. American College of Surgeons. Best Practices Guidelines for Acute Pain Management in Trauma Patients. Released November 2020. Accessed February 2021. https://www.facs.org/-/media/files/quality-programs/trauma/tqip/acute_pain_guidelines.ashx
24. Marhofer P, Schrögendorfer K, Koinig H, et al. Ultrasonographic guidance improves sensory block and onset time of three-in-one blocks. *Anesth Analg*. 1997;85(4):854-7. doi: 10.1097/00000539-199710000-00026. PMID: 9322469.
25. Williams SR, Chouinard P, Arcand G, et al. Ultrasound guidance speeds execution and improves the quality of supraclavicular block. *Anesth Analg*. 2003;97(5):1518-23. doi: 10.1213/01.ane.0000086730.09173.ca. PMID: 14570678.
26. Abrahams MS, Aziz MF, Fu RF, Horn JL. Ultrasound guidance compared with electrical neurostimulation for peripheral nerve block: a systematic review and meta-analysis of randomized controlled trials. *Br J Anaesth*. 2009;102(3):408-17. doi:10.1093/bja/aen384
27. Pasero CL, McCaffery M. Reluctance to order opioids in elders. Am J Nurs. 1997;97:20–3.
28. Roback MG, Wathen JE, Bajaj L, Bothner JP. Adverse events associated with procedural sedation and analgesia in a pediatric emergency department: a comparison of common parenteral drugs. *Acad Emerg Med*. 2005;12(6):508-13. doi:10.1197/j.aem.2004.12.009

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2023

Ultrasound Guidelines: Emergency, Point-of-care, and Clinical Ultrasound Guidelines in Medicine

Revised April 2023, June 2016 with current title

Revised October 2008

Originally approved June 2001 titled "Emergency Ultrasound Guidelines"

Sections

Tables

Figures

Appendices

Section 1 – Introduction

Clinical ultrasound (CUS) has become an integral aspect of emergency care in the United States for over two decades. Since the last update of these guidelines in 2016, the role of US has expanded throughout clinical medicine. The wide breadth of recognized CUS applications offers both diagnostic and therapeutic benefits to patients around the world. Benefits of bedside imaging with ultrasound include its relatively low cost, lack of ionizing radiation, portability, and ease of use. Data have demonstrated that CUS can improve diagnostic accuracy in numerous common clinical presentations, including dyspnea,[1] abdominal pain,[2] and joint dislocations.[3] Ultrasound guidance has also been incorporated into bedside procedures, improving success and decreasing inadvertent complications.[4-6]

Emergency physicians have been leaders in innovation and education in the CUS space both nationally and internationally. This has led to increased integration and improved standardization at the undergraduate, postgraduate, and continuing medical education levels. Emergency medicine (EM) leaders have also leveraged their extensive knowledge and teaching to educate other specialties seeking to enhance their ultrasound training and expertise. Specifically, CUS curricula in undergraduate medical education is growing exponentially due to the leadership and advocacy of emergency physicians, integrating CUS into the education of the next generation of clinicians. In fact, CUS in EM residency training has been codified in the Model of the Clinical Practice of Emergency Medicine, a joint policy collaboration between seven organizations. Moreover, CUS fellowship has advanced with fellowships now eligible for accreditation by the Emergency Ultrasound Fellowship Accreditation Council (EUFAC) and fellowship graduates being recognized with certification as a focused practice designation by ABEM. Leaders in CUS have created the foundation of a subspecialty of ultrasonography that provides the expertise for establishing clinical practice, educating across the educational spectrum, and researching the wide range of applications. CUS leaders have also become instrumental in bringing health care systems into the future by championing and often running system-wide programs. As CUS continues to evolve and access to ultrasound machines becomes increasingly widespread, it is critical to understand the current field and provide national guidelines to inform education and practice. This guideline update is intended to provide a framework for new and established programs utilizing CUS.

Section 2 -- Scope of Practice

CUS is the medical use of US technology for the bedside, clinical evaluation of acute or critical medical conditions.[7] It is utilized for diagnosis of any emergency condition such as the resuscitation of the critically ill patient, during guidance of procedures, and monitoring of certain pathologic states. CUS examinations are typically performed and interpreted by emergency physicians or those under the supervision of emergency physicians in the setting of the emergency department (ED) or a non-ED emergency setting hospital unit, out-of-hospital, battlefield, space, urgent care, clinic, or remote or other settings). It may be performed as a single examination, repeated serially due to clinical need or patient deterioration, or used for monitoring of physiologic or pathologic changes.

In this document, CUS refers to US performed by emergency physicians or clinicians in the emergency setting, while point-of-care ultrasound (POCUS) refers to a multidisciplinary field of US use by clinicians at the point-of-care.[8] Table 1 summarizes relevant US definitions in CUS.

Other medical specialties may wish to use this document if they perform CUS in the manner described above. However, guidelines which apply to US examinations or procedures performed by consultants, especially consultative imaging in US laboratories or departments, or in alternative settings may not be applicable to emergency physicians.

Emergency US (EUS) is an emergency medicine procedure, and should not be considered in conflict with exclusive "imaging" contracts that may be in place with consultative US practices. In addition, emergency US should be reimbursed as a separate billable procedure.[9] (See Section 7- Value and Reimbursement)

CUS is a separate entity distinct from the physical examination that adds anatomic, functional, and physiologic information to the care of the acutely-ill patient.[10] It provides clinically significant data not obtainable by inspection, palpation, auscultation, or other components of the physical examination.[11] US used in this clinical context is also not equivalent to use in the training of medical students and other clinicians in training looking to improve their understanding of anatomic and physiologic relationships of organ systems.

CUS can be classified into the following functional clinical categories:

1. *Resuscitative*: US use as directly related to an acute resuscitation
2. *Diagnostic*: US utilized in an emergent diagnostic imaging capacity
3. *Symptom or sign-based*: US used in a clinical pathway based upon the patient's symptom or sign (eg, shortness of breath)
4. *Procedure guidance*: US used as an aid to guide a procedure
5. *Therapeutic and Monitoring*: US use in therapeutics or in physiological monitoring

Within these broad functional categories of use, 15 core emergency US applications have been identified as Aorta, Bowel, Cardiac/Hemodynamic assessment, Deep Vein Thrombosis (DVT), Hepatobiliary, Musculoskeletal (MSK), Ocular, Pregnancy, Procedural Guidance, Skin and Soft-tissue, Testicular, Thoracic/Airway, Trauma, Ultrasound-Guided Nerve Blocks, and Urinary Tract. Evidence for these core applications may be found in Appendix 1. The criteria for a core application are widespread use, significant evidence base, uniqueness in diagnosis or decision-making, importance in primary emergency diagnosis and patient care, or technological advance.

Alternatively, symptom and sign based US pathways, such as Shock or Dyspnea, may be considered an integrated application based on the skills required in the pathway. In such pathways, applications may be mixed and utilized in a format and order that maximizes medical decision-making, outcomes, efficiency and patient safety tailored to the setting, resources, and patient characteristics. See Figure 1.

Emergency physicians should have basic education in US physics, knobology, instrumentation procedural guidance, and Focused Assessment with Sonography in Trauma (FAST) as part of EM practice. It is not mandatory that every clinician performing emergency US examinations utilize or be expert in each core application, but it is understood that each core application is incorporated into common emergency US practice nationwide. The descriptions of these examinations may be found in the ACEP policy, Emergency Ultrasound Imaging Criteria Compendium.[12] Many other US applications or advanced uses of these applications may be used by emergency physicians. Their non-inclusion as a core application does not diminish their importance in practice nor imply that emergency physicians are unable to use them in patient care.

Each EUS application represents a clinical bedside skill that can be of great advantage in a variety of emergency patient care settings. In classifying an emergency US, a single application may appear in more than one category and clinical setting. For example, a focused cardiac US may be utilized to identify a pericardial effusion in the diagnosis of an enlarged heart on chest x-ray. The focused cardiac US may be utilized in a cardiac resuscitation setting to differentiate true pulseless electrical activity from profound hypovolemia. The focused cardiac US can be used to monitor the heart during resuscitation in response to fluids or medications. If the patient is in cardiac tamponade, the cardiac US can also be used to guide a pericardiocentesis. In addition, the same focused cardiac study can be combined with one or more additional

emergency US types, such as the focused abdominal, the focused aortic or the focused chest/thoracic US, into a clinical algorithm for an undifferentiated hypotensive patient. See Figure 1.

Ultrasound guidance provides added safety to a wide variety of procedures ranging from vascular access (eg, central venous access) to drainage procedures (eg, thoracentesis pericardiocentesis, paracentesis, arthrocentesis) to localization procedures like US guided nerve blocks. These procedures may provide additional benefits by increasing patient safety and helping alleviate acute pain.

Other US applications are performed by emergency physicians, and may be integrated depending on the setting, training, and needs of that particular ED or EM group.

Other Settings or Populations

Pediatrics. CUS is a particularly advantageous diagnostic tool in the management of pediatric patients, in whom radiation exposure is a significant concern. CUS applications such as musculoskeletal evaluation for certain fractures (rib, forearm, skull), and lung for pneumonia may be more advantageous in children than in adults due to smaller patient size and density.[13] US can be associated with increased procedural success and patient safety, and decreased length of stay.[14,15] While most US modalities in the pediatric arena are the same as in adult patients (the EFAST exam for trauma, procedural guidance), other modalities are unique to the pediatric population such as in suspected pyloric stenosis and intussusception, or in the child with hip pain or a limp).[16-18] Mostly recently, EUS has been formally incorporated into Pediatric EM fellowship training.[19,20]

Critical Care. CUS core applications are being integrated into cardiopulmonary resuscitations and non-invasive hemodynamic monitoring into critical care scenarios.[21,22] Dual-trained physicians in emergency medicine and critical care are leading the application, education, and research of US for critically ill patients, and have significant leadership in advancing US concepts in multidisciplinary critical care practice. Advanced cardiopulmonary US application are being integrated into critical care practice.

Prehospital. There is increasing evidence that CUS has an increasing role in out-of-hospital emergency care.[23,24] Challenges to the widespread implementation of out-of-hospital US include significant training and equipment requirements, and the need for oversight and quality assurance. Studies focusing on patient outcomes need to be conducted to further define the role of out-of-hospital CUS and to identify settings where the benefit to the patient justifies the investment of resources necessary to implement such a program.[25]

International arena including field, remote, rural, global public health and disaster situations. US has become the primary initial imaging modality in disaster care.[26-30] US can direct and optimize patient care in natural disasters such as tsunami, hurricane, famine or man-made disasters such as battlefield or refugee camps. US allows for imaging in remote locations such as rural areas, developing countries, or small villages which often do not have other imaging options (eg, x-ray, CT, MRI), unreliable electrical supplies, and less experienced clinicians. US in outer space is often the only imaging modality for space exploration and missions.[31,32] Ultrasound has also been used in remote settings such as international exploration, mountain base camps, and cruise ships.[23] The increasing portability of US machines and development of handheld devices with improving image resolution has expanded the use of emergent imaging in such settings.

Military and Tactical. The military has embraced the utilization of US technology in austere battlefield environments.[33,34] It is now routine for combat support hospitals as well as forward surgical teams to deploy with next generation portable ultrasonography equipment. Clinical ultrasonography is often used to inform decisions on mobilization of casualties to higher echelons of care and justify use of limited resources. Within the last decade, emergency physicians at academic military medical centers have expanded ultrasonography training to clinical personnel who practice in close proximity to the point of injury, such as combat medics,

special operations forces, physician assistants, and nurse practitioners.[35] The overarching goal of these training programs is to create a generation of competent clinical sonologists capable of practicing "good medicine in bad places." The military is pursuing telemedicine-enabled US applications, automated US interpretation capabilities, and extension of clinical ultrasonography in additional areas of operation, such as critical care air evacuation platforms.[36]

Section 3 – Training and Proficiency

Training in CUS often begins today in undergraduate medical education (UME) where students first learn and practice the basics of sonography as part of their anatomy, pathophysiology, and physical exam coursework.[37] During Graduate Medical Education (GME), clinicians increasingly learn to utilize CUS applications specific to their specialty and practice environment.[38-40] Finally, clinicians continue to learn evolving applications and new technologies through decades of practice.[41]

Competency and Curriculum Recommendations

Competency in CUS requires the progressive development and application of increasingly sophisticated knowledge and psychomotor skills.[42,43] First, the clinician needs to recognize the indications and contraindications. Next, the clinician must be able to acquire adequate images. This begins with an understanding of basic US physics, translated into the skills needed to operate the US system correctly (knobology), while performing CUS application protocols on patients presenting with different conditions and body habitus. Simultaneous with image acquisition, the clinician needs to interpret the imaging by distinguishing normal anatomy, common variants, as well as a range of pathology from obvious to subtle. Finally, the clinician must be able to integrate EUS exam findings into their medical decision-making. Ultimately, this integration includes detailed knowledge of each particular exam's accuracy, as well as proper documentation for the medical record, credentialing, quality assurance, and reimbursement.

Given the continual advances in CUS, designing and implementing a comprehensive yet efficient curriculum for diverse learners requires considerable faculty expertise, dedicated non-clinical time, and ongoing department support. These updated guidelines continue to provide the learning objectives (See Appendix 2), educational methods, and assessment measures for a EUS residency or practice-based curriculum.

Evolving Educational Methods

Accelerated by necessity during the COVID-19 pandemic, innovative educational methods increasingly supplement more traditional education methods in EUS training.[44] Free open-access medical (FOAM) education, including carefully curated narrated lectures, podcasts and blogs, help educators create an engaging flipped clinical classroom.[45-48] For the trainee, asynchronous learning provides the opportunity to review required knowledge on-demand and at their own pace. For teachers, less time may be spent providing recurring didactics and more time dedicated to higher-level tasks such as teaching psychomotor skills and integration of exam findings into patient and ED management.

Similar to knowledge learning, there are new educational methods to teach the required psychomotor skills of EUS. The primary educational method continues to be small group hands-on training in the ED with CUS faculty, followed by supervised examination performance during clinical work, with timely quality assurance review and feedback. Simulation continues to play an important role as both an educational method and assessment measure.[43,44,49,50] Investigators have demonstrated that simulation results in equivalent image acquisition, interpretation, and operator confidence in comparison to traditional hands-on training. Simulation provides the opportunity for deliberate practice of a new skill in a safe environment prior to actual clinical performance. The use of simulation for deliberate practice improves the success rate of invasive procedures

and reduces patient complications. Additionally, simulation has the potential to expose trainees to a wider spectrum of pathology and common variants than typically encountered during a POCUS rotation. Blended learning created by the flipped classroom, live instructor training, and simulation provide the opportunity for self-directed learning, deliberate practice and mastery learning.[51-53] Furthermore, gamification provides the opportunity to actively engage learners while assessing and ultimately teaching clinical ultrasound knowledge and skills.[54,55]

Documenting Experience and Demonstrating Proficiency

Traditional set number benchmarks for procedural training in medical education have historically provided a convenient method for documenting the performance of a reasonable number of exams needed for a trainee to develop competency.[43] However, learning curves vary by trainee and application. Individuals learn the required knowledge and psychomotor skills at their own unique pace. Supervision, opportunities to practice different applications, and encounter pathology also likewise differ across departments.

Therefore, additional assessment measures need to be utilized in addition to set number benchmarks.[43,56] Recommended methods include the following: real-time supervision during clinical EUS, weekly quality assurance (QA) image review sessions, ongoing individual QA image review exam feedback, standardized knowledge assessments, small group Observed Structured Clinical Examinations (OSCEs), one-on-one standardized direct observation tools (SDOTs), and simulation assessments.[57] Ideally these assessment measures are completed both at the beginning and the end of a training period. Initial assessment measures identify each trainee's unique needs, providing the opportunity to modify a local curriculum as needed to create more individualized learning plans. Final assessment measures demonstrate current trainee competency and future learning needs, identify opportunities for curriculum improvement, and ideally are supported by patient outcomes.[56]

Trainees should complete a benchmark of 25-50 quality-reviewed exams in a particular application. Any individual clinician's learning curve may plateau below or above a set number benchmark for competency. With continued deliberate practice, proficiency will continue to slowly improve along the asymptotic line of expertise throughout a clinician's career.[58] Previously learned knowledge and psychomotor skills will often facilitate the learning and performance of new applications. For example, experience with FAST provides a springboard application to learning the genitourinary, transabdominal pelvic, and resuscitative clinical ultrasound applications.

Overall EUS trainees should complete a minimum benchmark of 150-300 total clinical US exams depending on the number of applications being utilized. For example, an academic department regularly performing greater than six applications may require residents to complete more than 150 exams, while a community ED with practicing physicians just beginning to incorporate EUS with FAST and vascular access may initially require less.

If alternative techniques are being used for an application, for example an endocavitary probe in early pregnancy evaluation, the minimum for that application should include substantial experience in that alternative technique. Trainees should complete a minimum of 10-15 examinations in the alternative technique during the completion of the 25-50 exams, since learning to properly interpret the anatomy and pathology occurs with each technique taught in a particular application.

Procedural US applications require fewer exams given prior knowledge, psychomotor skills, and clinical experience with the traditional landmark-based techniques. Trainees should complete five quality reviewed US-guided procedure exams or a learning module on an US-guided procedure task trainer.

Training exams need to include clinical and simulated patients with different conditions and body types. Exams may be completed in different settings including clinical and educational patients in the ED, live models at EUS courses, utilizing US simulators, and in other clinical environments. In-person supervision is optimal during introductory education but is not required for residency or credentialing examinations after initial didactic and supervised skills training. Evolving technologies now create the opportunity for remote supervision and feedback even in resource-limited settings.[59-61] Abnormal or otherwise positive scans need to be included during the completion of training exams used to meet credentialing requirements. When pathology is not encountered during patient care, common variants and pathologic findings need to be reviewed during QA or other educational sessions.

During benchmark completion (credentialing phase), all EUS exams should be quality reviewed for technique and accuracy by EUS faculty. Alternatively, an EUS training portfolio of exam images and results may be compared to other diagnostic studies and clinical outcomes in departments where EUS faculty are not yet available. After initial training, continued quality assurance of EUS exams is recommended for a proportion (5-10%) of ongoing exams to document continued competency. Secure online systems facilitate image review and QA feedback, while also improving workflow, utilization, documentation, and reimbursement.[62]

Training Pathways

There are two recommended pathways for clinicians to become proficient in EUS. See Figure 2. The majority of emergency physicians today receive EUS training as part of an ACGME-approved EM residency. A second practice-based pathway is provided for practicing EM physicians and other clinicians who did not receive training during residency.

These updated EUS guidelines continue to provide the learning objectives, educational methods and assessment measures for either pathway. Learning objectives for each application are described in Appendix 3.

Residency Based Pathway

EUS has been considered a fundamental component of emergency medicine training for over two decades.[63,64] The ACGME mandates procedural competency in EUS for all EM residents as it is a "skill integral to the practice of Emergency Medicine." Although the ACGME EM Milestones 2.0 project now includes ultrasound within Patient Care Milestone eight, ABEM is currently working with emergency POCUS leaders to better delineate diagnostic and procedural ultrasound withing the Emergency Medicine Model of Clinical Practice.[65] Appendix 4 provides recommendations for EM residency EUS education.

Upon completion of residency training, emergency medicine residents should be provided with a standardized EM Resident EUS credentialing letter. For the EUS faculty or ED Director at the graduate's new institution, this letter provides a detailed description of the EUS training curriculum completed, including the number of quality reviewed training exams completed by application and overall, and performance on SDOTs and simulation assessments. Example letters and other EUS program and education resources can be found at https://www.acep.org/emultrasound/resources/running-a-program/.

Practice-Based Pathway

For practicing EM attendings who completed residency without specific EUS training, a comprehensive longitudinal curriculum, multi-day course, series of short courses, or preceptorship is recommended.[66] Shorter courses covering single or a combination of applications may provide initial or supplementary training.[67] As part of pre-course preparation, EUS faculty must consider the unique learning needs of the participating

trainees. The course curriculum should include trainee-appropriate learning objectives, educational methods and assessment measures as outlined by these guidelines. If not completed previously, then introductory training on US physics and knobology is required prior to training in individual applications. Pre-course and post-course online learning may be utilized to reduce the course time spent on traditional didactics and facilitate later review. Small group hands-on instruction with EUS faculty on models, simulators, and task trainers provides experience in image acquisition, interpretation, and integration of EUS exam findings into patient care. See Appendix 5.

Preceptorships typically lasting 1-2 weeks at an institution with an active EUS education program have also been utilized successfully to train practicing physicians. Each preceptorship needs to begin with a discussion of the trainees' unique educational needs, hospital credentialing goals as well as financial support for faculty teaching time. Then the practicing physician participates in an appropriately tailored curriculum typically in parallel with ongoing student, resident, fellow and other educational programming.

Similar to an EM Resident EUS credentialing letter, course and preceptorship certificates should include a description of the specific topics and applications reviewed, total number of training exams completed with expert supervision, performance on other course assessment measures such as SDOTs or simulation cases, as well as the number of CME hours earned. These certificates are then given to local EUS faculty or ED directors to document training.

Physician Assistants, Nurse Practitioners, Nurses, Paramedics, and other EM clinicians

In many practice environments, EUS faculty often provide POCUS training and ongoing support to other clinicians including Physician Assistants, Nurse Practitioners, Nurses, Paramedics, Military Medics and Disaster Response Team members. Supervision should align with that defined by the ACEP policy statement, Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department.[68] The recommendations in these ACEP guidelines should be utilized by EUS faculty when providing such training programs. Pre-course preparation needs to include discussions with staff leadership to define role-specific learning needs and applications to be utilized. Introductory US physics, knobology, and relevant anatomy and pathophysiology are required prior to training in targeted applications.

Ongoing Education

As with all aspects of EM, ongoing education is required regardless of training pathway. The amount of education needed depends on the number of applications being performed, frequency of utilization, the local practice of the individual clinician, and developments within EUS and EM. Individual EUS credentialed physicians should continue their education with a focus on EUS learning as a recurring component of educational activities. Educational sessions that integrate EUS into daily practice are encouraged and do not have to be didactic in nature, but instead may be hands-on or online. Recommended EUS educational activities include EUS conference attendance, online educational activities, preceptorships, teaching, research, hands-on training, program administration, quality assurance, image review, written examinations, textbook and journal readings, as well as morbidity and mortality conferences inclusive of EUS cases. EUS quality improvement is an example of an activity that may be used for the completion of the required ABEM Improvement in Medical Practice Activity.

Fellowship Training

Fellowships provide the advanced training needed to create future leaders in evolving areas of medicine such as EUS. This advanced training produces experts in EUS and is not required for the routine utilization of EUS.

An Advanced Emergency Medicine Ultrasonography (AEMUS) fellowship provides a unique, focused, and mentored opportunity to develop and apply a deeper comprehension of advanced principles, techniques, applications, and interpretative findings. Knowledge and skills are continually reinforced as the fellow learns to effectively educate new trainees in EUS, as well as clinicians in other specialties and practice environments. A methodical review of landmark and current literature, as well as participation in ongoing research, creates the ability to critically appraise and ultimately generate the evidence needed for continued improvements in patient care through CUS. Furthermore, a fellowship provides practical experience in EUS program management including quality assurance review, medical-legal documentation, image archiving, reimbursement, equipment maintenance, and other administrative duties of an EUS program director or System-Wide CUS Director.[69]

Recommendations for fellowship content, site qualifications, criteria for fellowship directors, and minimum graduation criteria for fellows have been published by national EUS leaders and within the ACEP Emergency Ultrasound Fellowship Guidelines. Each fellowship program's structure and curriculum will vary slightly based on local institution and department resources. ABEM has helped to standardize AEMUS fellowships through a fellowship program accreditation process involving EUFAC (Emergency Ultrasound Fellowship Accreditation Council).[70] ACEP participates in this as a nominating organization to EUFAC. At all fellowship programs, mentorship and networking are fundamental to a fellow's and program's ultimate success. Both require significant EUS faculty time for regular individual instruction as well as participation in the clinical US community locally and nationally. Accredited fellowships are required to supply sufficient US faculty support to maintain the training environment. Hence, institution and department leadership support is essential to ensuring an appropriate number of EUS faculty, each provided with adequate non-clinical time.

For the department, a fellowship speeds the development of an EUS program. Fellowships improve EM resident training resulting in increased performance of EUS examinations. Furthermore, a fellowship training program may have a significant positive impact on overall EUS utilization, timely QA review, faculty credentialing, billing revenue, and compliance with documentation. For an institution, an EUS fellowship provides a valuable resource for other specialties just beginning POCUS programs. Collaborating with EUS faculty and fellows, clinicians from other departments are often able to more rapidly educate staff and create effective POCUS programs.

Advanced Emergency Medicine Ultrasonography was approved as a Focused Practice Designation (FPD) by the American Board of Medical Specialties in 2017. To be eligible for FPD certification in Advanced Emergency Medicine Ultrasonography, EUS fellows must be board certified by ABEM in EM and complete a EUS Fellowship that has been accredited by the new Emergency Ultrasound Fellowship Accreditation Council. After graduating, qualified fellows are then eligible to take the Advanced Emergency Medicine Ultrasonography Fellowship Examination now offered by ABEM to earn their FPD certification.[71,72]

US in Undergraduate Medical Education

EM faculty often lead efforts to improve Undergraduate Medical Education (UME) through the early integration of US. During the preclinical years, US has been demonstrated to be an effective educational method to reinforce student understanding of anatomy, physical examination skills, pathology and bedside diagnostic skills. During the clinical years, these students are able to utilize POCUS for clinical diagnosis on specific rotations. US exposure in UME can provide a solid foundation for the integration of POCUS into their clinical practice during Graduate Medical Education (GME).

Integrating US into UME

Integration of US into pre-clinical UME often begins with medical student and faculty interest.[73] By working

closely with a medical school's curriculum committee, US may then be incorporated as an engaging hands-on educational method to enhance learning within existing preclinical courses. Widespread POCUS utilization by different specialties within a medical school's teaching hospitals often helps to provide the needed faculty time and expertise, teaching space, and US equipment. Ongoing annual education then requires local departmental and medical school leadership support, as well as continued organized collaboration between faculty from participating specialties.

Innovative educational methods again provide the opportunity for clinical US faculty to focus on small group hands-on instruction as described in the innovative education section. Many academic departments that currently offer clinical rotations within EM already include an introduction to EUS as a workshop or a set number of EUS shifts. Dedicated EUS elective rotations provide an additional opportunity for medical students interested in EM and other specialties utilizing POCUS to participate in an EUS rotation adapted to their level of training and unique career interests. See Appendix 6 for recommendations for POCUS medical school rotations.

US in UME continuing into POCUS in GME

UME US experience should prepare new physicians to more rapidly utilize POCUS to improve patient care during graduate medical education (GME) training. Medical students therefore should graduate with a basic understanding of US physics, machine operation, and common exam protocols such as US guided vascular access. Medical students matriculating from a school with a detailed integrated US curriculum across the pre and clinical years, as well as those completing an elective POCUS rotation, should be provided with a supporting letter describing didactics, hands-on training, and total examinations. Although all trainees need to complete the EUS residency requirements, trainees with basic proficiency in US from UME training may progress more rapidly and ultimately achieve higher levels of EUS expertise during GME. Additionally, these residents may provide considerable EUS program support as peer-to-peer instructors, residency college leaders, investigators and potentially future fellows.

Section 4 – Hospital Credentialing and Privileging

Implementing a transparent, high-quality, verifiable and efficient credentialing system is an integral component of an EUS program. The medical staff at a hospital are governed by bylaws. Included within these bylaws are credentialing and re-credentialing requirements and responsibilities, including the delineation of privileges of clinicians. A high quality and verifiable credentialing process is a duty owed by a hospital to its patients. The hospital can be deemed negligent in the event of a bad patient outcome if the credentialing process is found to be deficient.

An EUS director, along with the department leadership, should develop policies and guidelines pertaining to EUS. The department should follow the specialty-specific guidelines set forth within this document for their credentialing and privileging process. Pertaining to clinician performed US, the American Medical Association (AMA) House of Delegates in 1999 passed a resolution (AMA Res. 802, I-99) recommending hospitals' credentialing committees follow specialty-specific guidelines for hospital credentialing decisions related to US use by clinicians.[74] This resolution became AMA policy, Privileging for Ultrasound Imaging,[74] and affirms that US imaging is within the scope of practice of appropriately trained physician specialists and provides clear support for hospital credentialing committees to grant EUS privileging based on the specialty-specific guidelines contained within this document without the need to seek approval from other departments. Furthermore, HR 802 states that opposition that is clearly based on financial motivation meets criteria to file an ethical complaint to the AMA.

The provision of clinical privileges in EM is governed by the rules and regulations of the department and institution for which privileges are sought. The EM Chairperson or Medical Director or his/her designee (eg, EUS director) is responsible for the assessment of CUS privileges of emergency physicians. When a physician applies for appointment or reappointment to the medical staff and for clinical privileges, including renewal, addition, or rescission of privileges, the reappraisal process must include assessment of current competence. The EM leadership will, with the input of department members, determine how each emergency physician will maintain competence and skills and the mechanism by which each physician is monitored.

EM departments should list EUS within their core EM privileges as a single separate privilege for "Emergency US" or US applications can be bundled into an "US core" and added directly to the core privileges. EM should take responsibility to designate which core applications it will use, and then track its emergency physicians in each of those core applications. To help integrate physicians of different levels of sonographic competency (graduating residents, practicing physicians, fellows and others), it is recommended that the department create a credentialing system that gathers data on individual physicians, which is then communicated in an organized fashion at predetermined thresholds with the institution-wide credentialing committee. This system focuses supervision and approval at the department level where education, training, and practice performance is centered prior to institutional final review. As new core applications are adopted, they should be granted by an internal credentialing system within the department of emergency medicine.

Eligible clinicians to be considered for privileging in EUS include emergency physicians, physician assistants, nurse practitioners, or other healthcare workers who complete the necessary training as specified in this document via residency training or practice-based training (see Section 3 – Training and Proficiency). After completing either pathway, these skills should be considered a core privilege with no requirement except consistent utilization and ongoing education. At institutions that have not made EUS a core privilege, submission of 5-10% of the initial requirement for any EUS application is sufficient to demonstrate continued proficiency.

Sonographer certification or EUS certification by external entities is not an expected, obligatory or an encouraged requirement for EUS credentialing.[75] Those physicians who specialize in AEMUS will have acquired a greater breadth and depth of knowledge in advanced techniques, research, and quality improvement skills. The FPD recognizes expertise held by emergency physicians with sophisticated, comprehensive knowledge of advanced emergency ultrasonography and is available only to ABEM-certified physicians.

Regarding re-credentialing or credentialing at a new health institution or system, ACEP recommends that once initial training in residency or by practice pathway is completed, credentialing committees recognize that training as a core privilege, and ask for proof of recent updates or at most a short period of supervision prior to granting full privileges.

In addition to meeting the requirements for ongoing clinical practice set forth in this document, physicians should also be assessed for competence through the CQI program at their institution. (See Section 6-Quality and US Management) The Joint Commission (TJC) in 2008 implemented a new standard mandating detailed evaluation of practitioners' professional performance as part of the process of granting and maintaining practice privileges within a healthcare organization.[76] This standard includes processes including the Ongoing Professional Practice Evaluation (OPPE) and the Focused Professional Practice Evaluation (FPPE). Specific to FPPE and US credentialing, for infrequently performed US examinations, FPPE monitoring can be performed on a predetermined number of examinations (ie, review of the diagnoses made on the first 10 or 20 of a particular US examination). The FPPE process should: 1. Be clearly defined and documented with specific criteria and a monitoring plan; 2. Be of fixed duration; and 3. Have predetermined measures or

conditions for acceptable performance. OPPE can incorporate EUS quality improvement processes. US directors should follow these guidelines when setting up their credentialing and privileging processes.

Section 5 – Specialty Certification

ABEM instituted specialty certification using a focused practice designation (FPD) pathway in 2021. ABMS created the FPD process to allow subspecialty recognition. Certification through the FPD process is available only to ABEM diplomates who have advanced training or expertise in emergency ultrasound. Details on the process and requirements are available at www.ABEM.org. The lack of achieving AEMUS FPD does not imply a lack of skill in ultrasound and FPD should not be viewed as required for use of ultrasound by EM graduates or as a requirement for billing for ultrasound.

Section 6 – Quality and US Management

To ensure quality, facilitate education, and satisfy credentialing pathways, a plan for an EUS quality improvement (QI) process should be in place. This plan should be integrated into ED operations. The facets of such a program are listed below. Programs should strive for meeting these criteria and may seek accreditation through the Clinical Ultrasound Accreditation Program (CUAP).

Emergency US Director

The emergency US director is a board-eligible or -certified emergency physician who has been given administrative oversight over the EUS program from the EM Chairperson, director or group. This may be a single or group of physicians, depending on size, location(s), and coverage of the group. Specific responsibilities of an US director and associates may include:

- Maintaining compliance with overall program goals: educational, clinical, financial, and academic.
- Selecting appropriate US machines, probes and equipment for the clinical care setting.
- Providing a maintenance care plan to ensure quality, cleanliness, disinfection and storage.
- Overseeing credentialing and privileging for physicians, physician assistants, nurse practitioners, and other healthcare workers within the group and/or academic facility.
- Providing educational resources for physicians, physician assistants, nurse practitioners, and other healthcare workers seeking credentialing, which may include in-house and/or outsourced educational content.
- Monitoring and ensuring documentation of individual physician privileges, educational experiences, and US scans performed.
- Developing, maintaining, and improving an adequate QA process in which physician scans are reviewed for quality in a timely manner and from which feedback is generated.

The emergency US director must be credentialed as an emergency physician and maintain privileges for EUS applications. If less than two years in the position of US director, it is recommended that the director have either: 1) graduated from an EUS fellowship either EUFAC or non-EUFAC accredited, 2) participated in an EUS management course, or 3) completed an EUS preceptorship or mini-fellowship. For ABEM-boarded directors, obtaining and maintenance of the Focused Practice Designation in Advanced EM Ultrasonography is strongly encouraged.[71]

Supervision of US Training and Examinations

Ultrasound programs involved in training must have clearly written policies regarding educational US examinations relevant to each type of learner. (See Sections 2, 3, and 4)

US Documentation

Emergency US is different from consultative US in other specialties as the emergency physician not only performs but also interprets the US examination. In a typical hospital ED practice, US findings are immediately interpreted, and should be communicated to other physicians and services through reports in the electronic medical record (EMR). Emergency US documentation reflects the nature of the exam, which is focused, goal-directed, and performed at the bedside contemporaneously with clinical care. This documentation may be preliminary and brief in a manner reflecting the presence or absence of the relevant findings. Documentation, as dictated by regulatory and payor entities, may require more extensive reporting including indication, technique, findings, and impression. US reports should be available in a timely manner to allow review by members of the health care team and consultants.[77]

During out-of-hospital, remote, disaster, and other scenarios, US findings may be communicated by other methods within the setting constraints. Incidental findings should be communicated to the patient or follow-up clinician. Discharge instructions should reflect any specific issues regarding US findings in the context of the ED diagnosis. Hard copy (paper, film, video) or digital US images should be saved within the ED or hospital archival systems. Digital archival with corresponding documentation is optimal and recommended.[78] Finally, documentation of emergency US procedures should result in appropriate reimbursement for services provided.[9,79] (See Section 7 – Value and Reimbursement)

Quality Improvement Process

A QI process is an essential part of any US program and should include a QA component focused on review of each clinician's use of ultrasound. QA should evaluate use of ultrasound in indicated clinical scenarios, technical competence for image acquisition and accurate interpretation. Technical parameters to be evaluated might include image resolution, anatomic definition, and other image quality acquisition aspects such as gain, depth, orientation, and focus. In addition, QA should compare the impression from the EUS interpretation to patient outcome measures such as consultative US, other imaging modalities, surgical procedures, pathology reports or patient clinical outcome.

The QI system design should strive to provide timely feedback to physicians. Any system design should have a data storage component that enables data and image recall. A process for patient callback should be in place and may be incorporated into the ED's process for calling patients back. Callbacks should occur when the initial image interpretation, upon QA review, may have been questionable or inappropriate and of clinical significance. In all cases, the imaging physician is informed of the callback and appropriate counseling/training is provided. All studies obtained by non-credentialed physicians should be reviewed.

Once clinicians are credentialed, programs should strive to sample a significant number of studies from each clinician that ensures continued competency. Due to the varieties of practice settings the percentage of studies undergoing review should be determined by the US director and should strive to protect patient safety and maintain competency. While this number can vary, a goal of 5-10% may be reasonable, adjusted for the experience of the clinician and novelty of the US application in that department.

The general data flow in the QA system is as follows:

1. Images obtained by the imaging clinician should be archived, ideally on a digital system. These images may be still images or video clips and should be representative of the US findings.
2. Clinical indications and US interpretations should be documented.
3. These images and data are then reviewed by the US director or a designee.
4. Reviewers evaluate images for accuracy and technical quality and submit the reviews back to the imaging clinician.

5. EUS studies are archived and available for future review should they be needed.

QA systems currently in place range from thermal images and logbooks to complete digital solutions. Finding the system that works best for each institution will depend on multiple factors, such as machine type, administrative and financial support, and physician compliance. Current digital management systems offer significant advantages to QA workflow and archiving.

US QA may also contribute to the ED's local and national QI processes. US QA activities may be included in professional practice evaluation, practice performance, and other quality improvement activities. Measures such as performance of a FAST exam in high acuity trauma, detection of pregnancy location, and use of US for internal jugular vein central line cannulation are examples of logical elements in an overall quality plan. In addition, US QA databases may contribute to a registry regarding patient care and clinical outcomes.

US Machines, Safety, and Maintenance

Dedicated US machines located in the ED for use at all times by emergency physicians are essential. Machines should be chosen to handle the rigors of the multi-user, multi-location practice environment of the ED.[80] Other issues that should be addressed regarding emergency US equipment include: regular in-service of personnel using the equipment and appropriate transducer care, stocking and storage of supplies, adequate cleaning of external and internal transducers with respect to infection control, maintenance of US machines by clinical engineering or a designated maintenance team, and efficient communication of equipment issues. Clinicians using ultrasound should follow common ED US safety practices including ALARA (as low as reasonably achievable), probe decontamination, and machine maintenance. A policy should be in place to address the use of non-dedicated US machines used by emergency medicine clinicians in the department, such as personal handheld ultrasound devices.[81]

Risk Management

US can be an excellent risk reduction tool through 1) increasing diagnostic certainty, 2) shortening time to definitive therapy, and 3) decreasing complications from procedures. An important step to managing risk is ensuring that physicians are properly trained and credentialed according to national guidelines such as those set by ACEP and outlined in this document. Proper quality assurance and improvement programs should be in place to identify and correct substandard practice. The greatest risk regarding EUS is lack of its use in appropriate cases.[82]

The standard of care for emergency US is the performance and interpretation of US by a credentialed emergency physician within the limits of the clinical scenario. Physicians performing US imaging in other specialties or in different settings have different goals, scopes of practice, and documentation requirements, and consequently should not be compared to EUS. As EUS is a standard emergency medicine procedure, it is included in any definition of the practice of emergency medicine with regards to insurance and risk management.

Section 7 – Value and Reimbursement

Value in health care has been defined as outcomes that matter to patients relative to cost.[83] The value of CUS is maximized when time spent by the clinician prevents costly imaging, invasive therapeutics, unnecessary consultations and produces accessible real-time results for the patient and the health care system.

Clinical US contributes to patient health in several ways:

1. Improving patient safety by reducing medical errors during procedures

2. Increasing patient satisfaction
3. Improving departmental resource utilization
4. Eliminating costly or invasive procedures
5. Improved clinical decision making

Reimbursement for US derives from Current Procedural Terminology (CPT) codes and their respective relative value units (RVUs). The reimbursements for US are calculated on work performed by entities within the healthcare system, with some going to physicians and some going to hospital entities.[9] The current system assumes a similar workflow for all US. The evolution of CUS has changed the workflow for many clinicians.

From a practical standpoint, reimbursement from the performance of CUS occurs through two primary mechanisms. One is billing for services rendered using Centers for Medicare and Medicaid Services (CMS) guidelines, or direct billing. This is the way that most specialties get reimbursed for performing and interpreting ultrasound and the rules are the same regardless of the specialty. Billing for ultrasound involves the use of CPT codes that define the type of ultrasound performed and ICD-10 codes to support the reason for the ultrasound. Billing for the performance and interpretation of CUS involves following rules determined by CMS, as well as any applicable hospital or third-party rules on performance and documentation of CUS.

The second way for reimbursement of CUS in the ED is within the CMS rules for general ED department visits using the CMS chart leveling process. This is called evaluation and management (E&M) leveling. Charts are coded as level 1 through level 5 with higher levels receiving greater reimbursement. Clinical ultrasound use contributes to the chart leveling process by demonstrating increased complexity and medical decision making by the treating clinician. A percentage of instances when a CUS is performed will result in the visit being eligible for higher chart coding and subsequently higher reimbursement. Stated another way, some patients imaged with ultrasound will have a higher chart level (and reimbursement) when compared to an identical patient who did not receive a clinical ultrasound.[84,85] CMS Requirements such as documentation detail and image retention for billing for clinical ultrasound performance and interpretation do not necessarily apply for revenue obtained through E&M, but hospital or departmental policies would still apply.

The current workflow for CUS differs widely from the historical workflow in traditional imaging specialties. While consultative US centers on providing a work product for the interpreting physician, CUS centers on the patient. The clinician evaluating the patient utilizes US at the patient's bedside to answer a focused question or guide an invasive procedure. The bedside physician takes over tasks that are attributed to the hospital's practice expenses, such as bringing the unit to the bedside, obtaining US images, and archiving images for the medical record. Figure 3 shows the workflow in the model of CUS.

In addition to workflow differences, CUS has generally lower expenses related to capital equipment, physical plant and supplies. The US machine is a less expensive mobile unit located in the ED and moved to the patient's bedside. Some hospitals are turning to lower cost archiving alternatives to PACS, including US management systems (also known as middleware or workflow solutions) or cloud-based software solutions which can allow readily accessible digitally archived images.

CPT values physician work (ie, wRVU) required for common EUS at approximately 40% of the global RVU (total professional plus total technical). Active CUS programs allow the hospital to bill technical fees which support the cost of the machine, supplies, and archiving/quality assurance software.

Efficiencies gained by incorporating US imaging in the care of emergency medicine patients can produce an overall cost savings to the healthcare system. Clinical ultrasound may provide significant benefits by reducing the needs for hospitalization, improved diagnosis and improved outcomes. With these benefits, shared savings should be attributed appropriately to the entity which affected the change.

A more detailed calculation of work depends on the specific clinical system organization and division of labor/resources. Future alternative payment structures such as value-based purchasing, bundled payments, or accountable care organizations (ACOs) should appropriately factor the resources, efficiency and value of CUS into the value and reimbursement of emergency medical care.

Section 8 - Clinical US Leadership in Healthcare Systems

Many specialties in addition to EM utilize CUS across diverse patient care settings. Consequently, there is a need for direction, leadership, and administrative oversight for hospital systems and health systems to support, oversee, and administer an US workflow and due process in an organized, coordinated, and consistent manner. Emergency physicians have decades of experience developing, maintaining, and administering CUS programs within the ED. Furthermore, they have a broad scope of practice and interact with essentially all specialties. Thus, they are uniquely positioned to serve in the role of Systemwide Clinical US Director. Specifically, hospital and healthcare systems should:

1) consider CUS separate from consultative imaging and
2) use these guidelines and associated guidelines to design institutional clinical US programs; and
3) strongly consider experienced emergency physician US leaders for system leadership roles in CUS.

There are many approaches to institutional oversight of multidisciplinary CUS programs including and not limited to: 1) consensus from major utilizers; 2) formation of a governing body such as a CUS steering committee; or 3) creation of the position of an institutional CUS director. This person should have a broad understanding of all applications and integration of CUS. Specific items to consider which require leadership and coordination include policy development, equipment purchase, training and education, competency assessment and credentialing, quality assurance, and value/reimbursement.

As the field continues to grow, there will be an increasingly large number of requests for CUS equipment. There may be advantages to standardizing or coordinating hardware and software when possible so that clinicians may share equipment across departments. This standardization may allow purchasing and cost saving advantages due to bulk purchase negotiations as well as benefits for training with regard to machine familiarity. Standardization may have some negative effects due to vendor exclusivity limiting access to certain advancement in technologies and feature availability only available on other US products.

In academic and community centers there will be a need for educating trainees of different disciplines, specialties, and levels of experience. Ideally, education for each individual specialty should come from within that specialty. In the situation where education is needed and there are no leaders within a specific specialty, then the training may fall to the director or committee as described above. In these cases, the director should work with the leadership within the specialty to meet the training needs of that department. “Train the trainer” programs are encouraged to help build intradepartmental capabilities.

It is crucial to develop subject matter experts within the hospital to meet the ever-increasing administrative, clinical, and educational needs. Once these leaders are established, it will be useful to have the committee and director oversee and coordinate to make sure these pillars are consistent across specialties, and that resources and work effort are shared and not duplicated.

Credentials for each specialty should follow national guidelines and be specialty specific.[72] However, if national training guidelines for specialties do not exist, the director and/or committee should create general credentialing guidelines based on the ACEP structure. These should be flexible enough to meet the needs of that specialty for their relevant applications.

Quality assurance and quality improvement should be organized and run within a department. There may not be subject matter experts with the time, qualifications, and/or interest in providing this workflow requirement. In these cases, the director and/or committee should work with that department/specialty to develop a plan to meet this need. Institutions must provide appropriate resources to system-wide programs. A CUS program can be organized and structured by following the steps outlined in the ACEP System-Wide Ultrasound Director committee documents.[69,86]

Section 9 - Future Issues

Recent technological advances and miniaturization of US devices have improved access and overall US imaging. Wireless transducers, handheld systems and app-based imaging connected via smart device are all becoming the reality of CUS.[87-91] These enhancements represent novel and exciting forms of US technology that expand the availability of US to new clinical settings due to increased portability and relative affordability. These new devices are currently being evaluated in a variety of clinical settings and more diverse situations that had not previously been possible.

While the benefits of handheld US devices are undeniable, concerns regarding operator qualifications, device security, cloud storage, data ownership, disinfection protocols, reimbursement, patient confidentiality, and safety are all serious concerns which continue to persist.[92,93] Non-CUS organizations have raised many of these as potential risks to patient care when not properly addressed.[94] Though there are barriers surrounding handheld US device use, many of these can be overcome by adhering to policies and guidelines developed by organizations such as ACEP to maintain quality and ensure patient safety.[81]

Transducer technology will continue to evolve, including high-resolution transducers that optimize sonographic windows, integrated probe/machine devices, and devices that use existing and new computer connections. Continuous advancements will allow clinicians to utilize US technology increasingly and reduce inherent limitations and obstacles to use. However, cost remains one of most prominent barriers for widespread use of some of the newer and potentially helpful technologies, such as electronic volumetric transducers which allow the acquisition of a large volume of data with no movement of parts within the probe. Currently, there is considerable variation with US workflow and standards; however, the number of vendors in this space has fortunately increased significantly with several hardware manufacturers developing their own workflow and image archiving solutions. The few long-established software-only solutions have been joined by new third-party workflow and archiving vendors, offering more options to CUS users than ever before.

The automation and integration of machine learning into CUS is yet another developing arena. Artificial intelligence (AI) has the potential to dramatically increase the impact of CUS on patient care by assisting with both image acquisition and interpretation. Multiple companies have developed a variety of machine learning algorithms ranging from detection of B-lines on lung US, determination of left ventricular ejection fraction, and enhanced visualization for needle guidance during procedures. The near future holds promise for expanded cardiac assessment capabilities based on additional machine learning algorithms as well as abdominal and musculoskeletal applications. While the progress of AI assistance in CUS has been much slower than initially anticipated, the sheer volume of small and large vendors endeavoring to develop clinically impactful applications will result in a significant expansion of AI-based tools available to CUS users. Many CUS-focused vendors have realized that AI applications must provide customer solutions from start to finish and now incorporate image guidance to locate the target window of interest and then perform an automated assessment of anatomy or function. In the mid and long term, it is anticipated that AI applications will be able to perform rapid and accurate ultrasound assessments more efficiently than humans. Such changes, if realized, will drive down the skill level required to perform ultrasound in a clinically meaningful way. However, the expansion and increased sophistication of machine learning algorithms in

CUS will risk an erosion of skills required to perform ever more complex ultrasound examinations. Patient performed automated ultrasound is on the FDA radar and applications have already been submitted by vendors for clearance. Unsupervised scanning by patients, or consumer-based automated ultrasound may follow.

The implementation of new technologies has played a consistent and central role throughout the history of medical malpractice. Although the evidence is sparse for CUS resulting in increased malpractice claims and some published articles suggest the opposite, we should expect an increase in claims with an increase in utilization. One only has to look to our radiology and obstetrical colleagues to realize that ultrasound related claims will occur with some regularity and anecdotal evidence of more recent malpractice case filings indicates plaintiff attorneys are beginning to target emergency physicians (both for failing to use and for using ultrasound) more than previously seen.

Despite the proliferation of technology, the use of CUS is growing more slowly in non-academic practice settings. Most of the evidence published to date originated from academic settings and more attention needs to be paid in community practice settings, which represent the majority of patients seen globally. To have a meaningful and widespread impact on patient care, it is crucial to integrate CUS into clinical practice outside of academic settings. Physicians in these settings may not even be aware of benefits of ultrasound technology including increased patient safety, improved workflow, and patient throughput as well as the expansion of the examinations available to patients presenting to the ED. Unfortunately, the current community practice dominance by contract groups, which have little incentive to support expansion of emergency ultrasound use, means change will likely continue to occur slowly in those settings.

Telesonography is a rapidly developing model which allows transfer of US images and video from remote locations to obtain consultation and treatment recommendations.[95] Recent advances in US technology, informatics, cloud computing, and 5G networks can allow remote experts to direct on-site, less-experienced sonographers to obtain and interpret images that can impact patient care in real-time. An expert CUS mentor could potentially guide distant untrained health care workers geographically dispersed over multiple locations around the world. This paradigm may be utilized across all applications including procedural assistance. The practice of remote telesonography has the potential to improve quality of care in underserved communities in both domestic and global settings. This is still a growing area with unclear reimbursement policies for emergency medicine physicians that needs further guidance from CMS.

Physician assistants, nurse practitioners, nurses, emergency medical service personnel and others recognize the potential in their practice settings and desire to learn appropriate applications. Emergency physicians should continue to collaborate with our colleagues at local, regional and national levels to help educate and implement appropriate training and practice standards for the safety of our patients. in addition, leadership, supervision, and collaboration with physicians in other specialties will continue to be critical to assure the safe, effective use of CUS.

Importantly, ultrasound should not be conceptualized as an extension of the physical examination. While this was initially seen as a method to deflect criticism and breakdown resistance by some clinical specialties, it is now more commonly utilized to advocate against appropriate reimbursement for a focused diagnostic ultrasound examination at the point-of-care. This approach has already shown evidence of undermining reimbursement and is likely to continue to do so, resulting in many of our current applications being unreimbursed in the future, resulting in limitations in program resources, program expansion, and patient access to care. Emergency physicians should continue to reinforce that CUS is a diagnostic modality, separate from and far above the capabilities of the physical examination and reimbursement is fully indicated.

Finally, quality programs such as the Clinical Ultrasound Accreditation Program[96] will provide leadership to EDs who can meet the criteria in this document. As CUS moves forward, continued high quality research in

the field needs to occur. Future methodological improvements focused on patient outcomes are crucial for the advancement of CUS within medicine. Multi-center studies producing higher levels of evidence will allow the continued growth of CUS in emergency care. The future, while undeniably bright, still requires much effort on the part of us all.

Section 10 – Conclusion

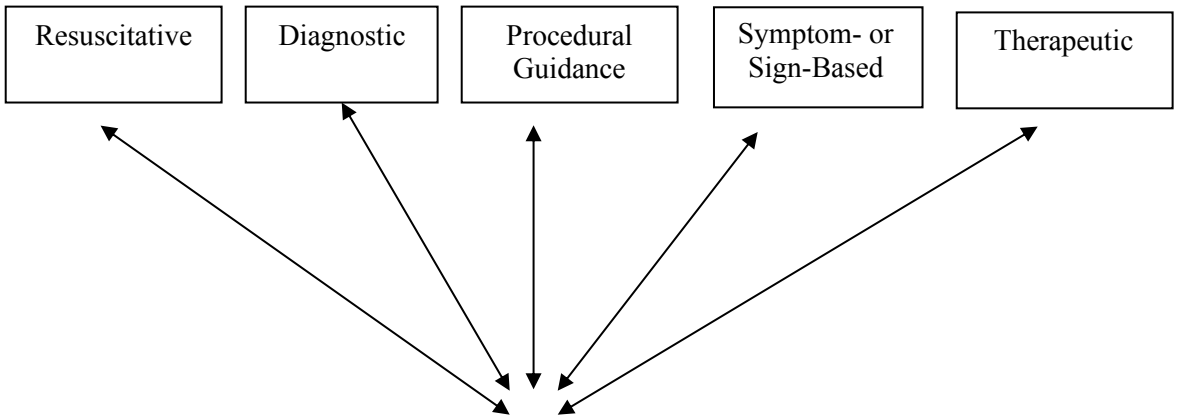
ACEP endorses the following statements on the use of emergency, clinical, point-of-care US:

1. Emergency, clinical point-of-care ultrasound performed, interpreted, and integrated into clinical care by emergency physicians is a fundamental skill in the practice of emergency medicine.
2. The scope of practice of emergency US can be classified into categories of resuscitation, diagnostic, symptom or sign-based, procedural guidance, and monitoring/therapeutics in which a variety of emergency US applications exists, including the core applications of Aorta, Bowel, Cardiac/Hemodynamic Assessment, Deep Venous Thrombosis (DVT),trauma, Hepatobiliary, Musculoskeletal (MSK), Ocular, Pregnancy, Procedural Guidance, Skin and soft-tissue, Testicular, Thoracic/Airway, Trauma, Ultrasound-Guided Nerve Blocks, and Urinary Tract.
3. Training and proficiency requirements should include didactic, experiential and integrative components as described within this document.
4. Emergency US training in EM residency programs should be fully integrated into the curriculum and patient care experience.
5. Emergency US should be considered a core credential for emergency physicians undergoing privileging in modern healthcare systems without need for external certification.
6. US QA and management require appropriate resources including physician direction, dedicated US machines, digital US management systems, and resources for QA.
7. Healthcare clinical point-of-care ultrasound programs optimally led by emergency physicians should be supported with resources for leadership, quality improvement, training, hardware and software acquisition and maintenance.
8. Emergency US is an independent procedure that should be reimbursed and valued, independent of the ED history, physical examination, and medical decision-making.
9. Emergency physicians with advanced US expertise should contribute leadership in clinical ultrasonography at the departmental, institutional, system, national, and international level.
10. Evolving technological, educational, and practice advancements may provide new approaches, efficiencies, and modalities in the care of the emergent patient.

Table 1. Emergency Medicine Ultrasound Definitions

Advanced Emergency Medicine Ultrasonography (AEMUS)	US by emergency physicians with advanced training. This term is used by the American Board of Emergency Medicine Focused Practice Designation.
Focused Practice Designation (FPD)	A pathway created by American Board of Medicine Specialties to recognize advanced training. The pathway is specialty specific and applies to advanced knowledge in an area. The American Board of Emergency Medicine offers an FPD in AEMUS.
Point-of-care Ultrasound (POCUS)	US performed by clinicians at the patient's bedside that answers a specific clinical question. There are many somewhat synonymous terms for US performed by EM physicians at the patient's bedside.
Emergency Ultrasound	US performed and interpreted by the clinician as an emergency procedure and directly integrated into the care of the patient. There are many somewhat synonymous terms for US performed by EM physicians at the patient's bedside.
Educational Ultrasound	US performed on a patient, volunteer, or in simulation that is not intended to provide information to further the clinical care of that individual.
Consultative Ultrasound	US performed by non-EM specialists at the request of an EM physician. This US is generally distinct from emergency ultrasound in its scope (less narrow) and purpose (diagnostic question that can wait for a consultant).
Resuscitative Ultrasound	US use directly related to cardiac resuscitation (ACLS), general medical resuscitation (eg, sepsis), or resuscitation from unknown causes.
Diagnostic Ultrasound	US use in a diagnostic imaging capacity. Some diagnostic US are performed in series to monitor physiologic changes.
Sign- or Symptom-Based Ultrasound	US used in a clinical pathway based upon the patient's symptoms or signs (eg, shortness of breath)
Therapeutic Ultrasound	US use as part of therapy for patient care
Ultrasound-Guided Procedure	US to guide a procedure in real-time
Ultrasound-Assisted Procedure	US used to assist with a procedure that is not performed in real-time (eg, pre-procedural identification)
Limited Ultrasound	US imaging of an organ or organ system that is not comprehensive. This term is used to represent a level of US for coding and billing. Limited US are sometimes confused for incomplete US where a complete set of needed images are not recorded or performed.

Figure 1. ACEP 2023 Emergency US Guidelines Scope of Practice



Core Applications

Aorta
Bowel
Cardiac/HD Assessment
Deep Vein Thrombosis (DVT)
Hepatobiliary
Musculoskeletal (MSK)
Ocular
Pregnancy
Procedural Guidance
Skin and Soft Tissue
Testicular
Thoracic/Airway
Trauma
Ultrasound-Guided Nerve Blocks
Urinary Tract

Figure 2. Pathways for clinical ultrasound training, credentialing, and incorporation of new applications

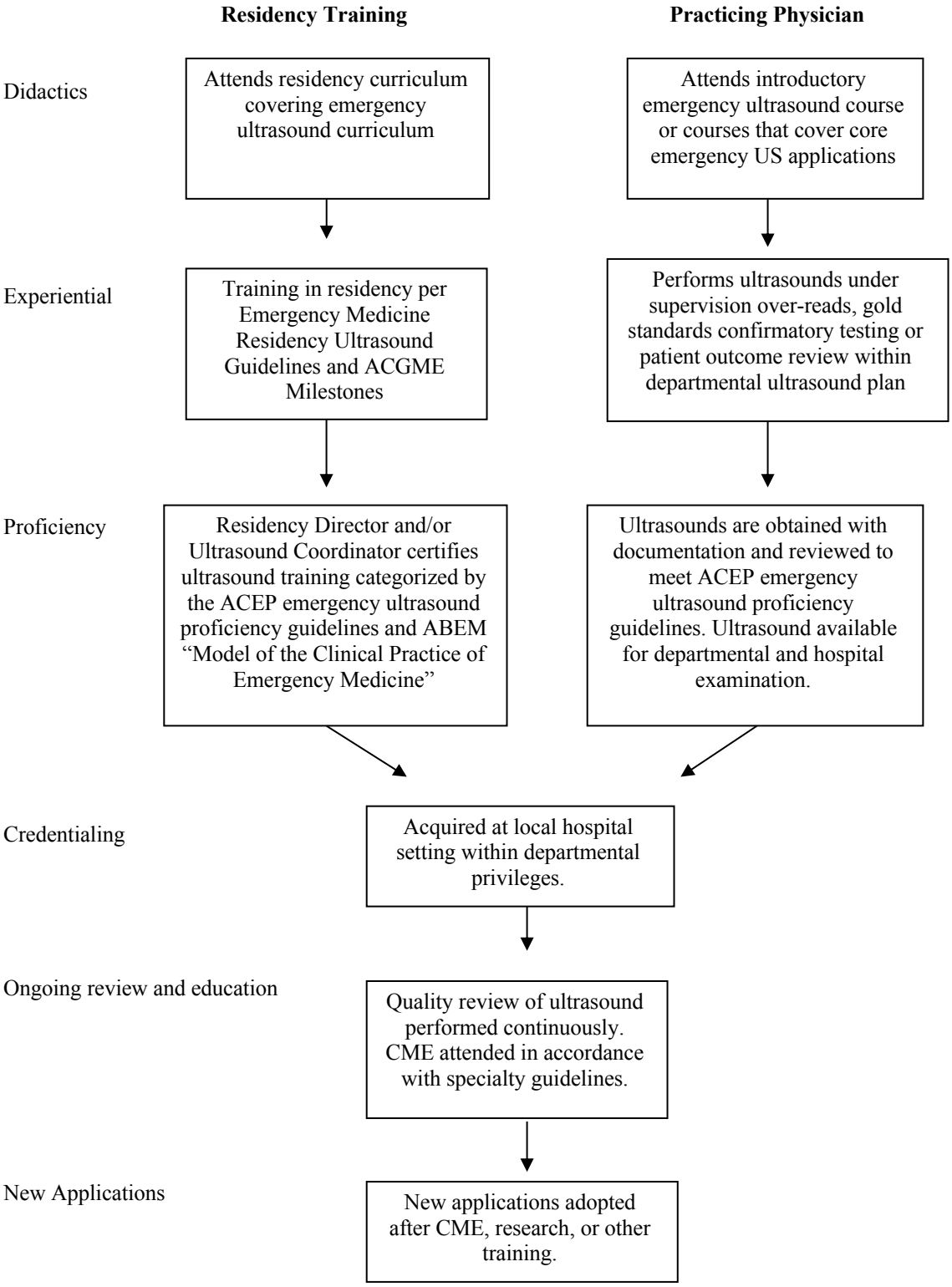
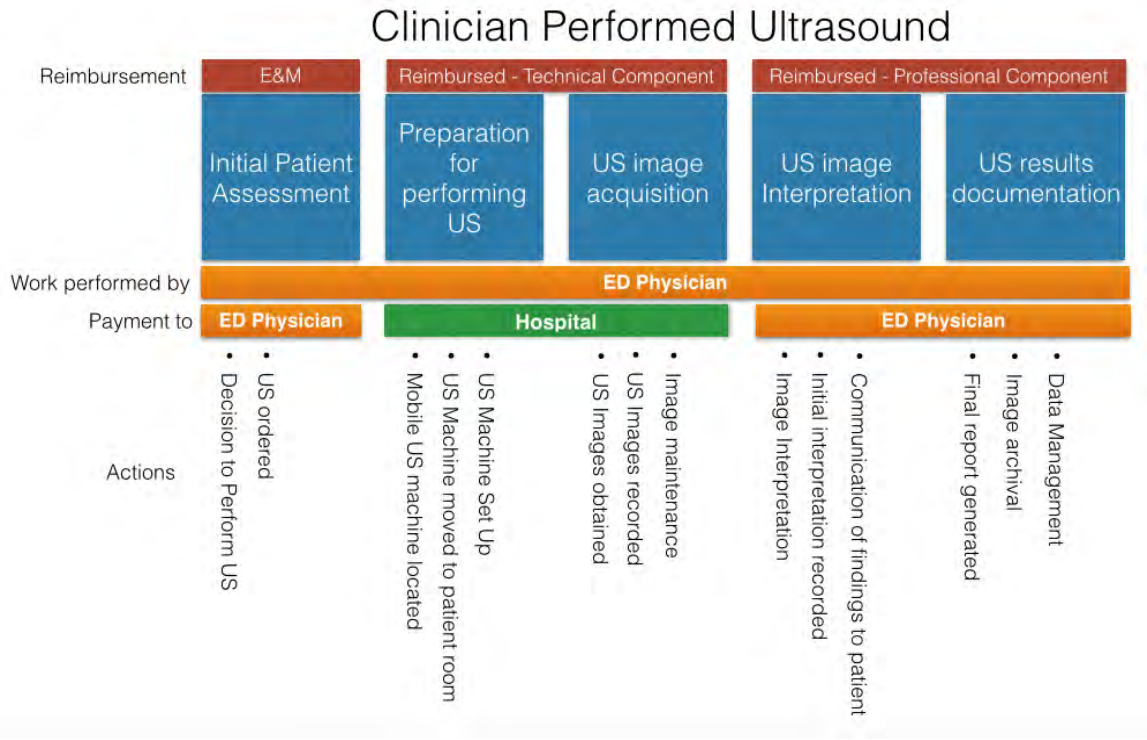


Figure 3. Clinical Ultrasound Workflow



Appendix 1. Evidence for Core Emergency Ultrasound Applications

Aorta Ultrasound

Clinical ultrasound for aortic evaluation has been primarily focused to identify or exclude the presence or absence of aortic aneurysms. A systematic review assessed the test characteristics of EP-performed US to identify AAA against radiology performed US, MRI, CT, aortography, operative findings or autopsy reports as criterion standards, with pooled data demonstrating sensitivity 97-100%, specificity 94-100%, positive likelihood ratio of 10.8 to infinite, and negative likelihood ratio of 0-0.025 in detecting AAA[97] by EPs. Another study evaluated student-performed ultrasound and was found to be superior to physical exams performed by vascular surgery attendings in detecting AAAs,[98] thus US is a useful tool in detecting AAA, even when performed by less experienced operators. The Screening for Abdominal Aortic Aneurysms Very Efficiently (SAAVE) initiative by Medicare underscores the importance of AAA screening in certain populations and has been shown to decrease AAA-related mortality and rupture,[99] but such screenings were less successful in the busy emergency department setting.[100]

While AAA is the most common aortic pathology seen on US, dissection and rupture are sometimes encountered. In a prospective study, abdominal aortic dissection was identified on EP-performed ultrasound, compared to CT angiography as the criterion standard, with sensitivity of 86%, specificity of 100%, and negative predictive value 84%.[101] Typically rupture is difficult to discern on US, but some signs have been proposed as highly specific for rupture, including irregularity of the aneurysmal shape, focal discontinuity of the aortic wall, floating thrombus, interruption of the thrombus, para-aortic hypoechoic foci, as well as concomitant peritoneal and/or retroperitoneal fluid.[102] When Type A aortic dissections are considered, indirect signs such as, pericardial effusion, aortic regurgitation, and a dilated aortic root can also be identified with bedside cardiac ultrasonography which may increase the sensitivity of this diagnosis.[103-105] However, failure to identify these indirect signs cannot effectively rule out aortic dissection and may occasionally warrant additional diagnostic modalities in the appropriate clinical scenario.[105]

Bowel

Ultrasound has been studied extensively in the diagnosis of appendicitis for adults and children, with one systematic review and meta-analysis demonstrating that POCUS has a sensitivity of 92% and a specificity of 96%.[2] Ultrasound is considered the first-line diagnostic study for appendicitis in children due to its lack of ionizing radiation compared to CT and availability compared to MRI.[106] It has been demonstrated to decrease CT scan utilization and shorten ED length of stay for children with suspected appendicitis.[107]

Clinical ultrasound can also be utilized to assess for small bowel obstruction, diverticulitis, hernia, and pneumoperitoneum. A large systematic review and meta-analysis found that US was 92.4% sensitive and 96.6% specific for diagnosing small bowel obstruction.[108] Among patients with suspected small bowel obstruction, POCUS is more accurate than x-ray and one study found that US was 3 hours and 42 minutes faster than CT.[109] Ultrasound has been demonstrated to be 92% sensitive and 90% specific for diverticulitis with accuracy approaching that of CT.[110] A recent prospective observational study of emergency medicine clinicians reported that US was 92% sensitive and 97% specific for diverticulitis,[111] while another study found that integrating US into the clinical assessment reduced time to diagnosis by 3 hours and 53 minutes.[112] Ultrasound can identify pneumoperitoneum faster than CT and with greater accuracy than x-ray.[113] A 2018 systematic review and meta-analysis found that US was 91% sensitive and 96% specific.[114] Further, US can provide information about abdominal wall masses and suspected hernias, with 97% sensitivity and 85% specificity,[115] even guiding diagnosis and reduction of hernias at the bedside in real-time.[116]

Among pediatric patients, evidence has been growing regarding the role of clinical ultrasound to identify intussusception and hypertrophic pyloric stenosis. Intussusception is a common cause of pediatric bowel obstruction and can be challenging to diagnose based on history and physical examination alone. Recent data suggest POCUS for intussusception has comparable diagnostic accuracy to radiology-performed studies,[117] and a recent systematic review and meta-analysis reported a sensitivity of 94.9% and a specificity of 99.1%.[118] POCUS for intussusception can also improve time to reduction and shorten ED length-of-stay.[119] While data on POCUS for hypertrophic pyloric stenosis are more limited, recent studies have reported high sensitivity (96.6-100%) and specificity (94-100%),[120,121] as well as decreased length of stay.[121]

Cardiac and Hemodynamic Assessment

Transthoracic focused cardiac US can be used to assess for pericardial effusion and tamponade, cardiac activity for patients in cardiac or traumatic arrest, global assessment of left ventricular function, right heart strain, and the detection of central venous volume status.[122] EP-performed cardiac US is highly sensitive and specific for the diagnosis of pericardial effusion.[123] In patients with penetrating chest trauma the use of focused cardiac US expedited diagnosis of pericardial fluid and tamponade and lead to expedited treatment.[124] In traumatic and cardiac arrest, US has prognostic value.[125-127] The likelihood of survival is zero after traumatic arrest when either pericardial fluid or cardiac activity are not visualized in cardiac US.[125] In a multicenter study on 793 patients in cardiac arrest, cardiac activity with US was associated with an increased survival to hospital admission (OR 3.6, 2.2-5.9) and hospital discharge (OR 5.7, 1.5-21.9). Although cardiac standstill was associated with mortality, 0.6% patients survived to discharge.[127]

Cardiac US has been incorporated into the management of hypotensive and dyspneic patients. In patients with undifferentiated hypotension, EP-performed cardiac US assessment of left ventricular ejection fraction correlates well with measurements obtained by cardiology,[128] and its use leads to improved diagnostic accuracy for the etiology of hypotension.[129,130] IVC assessment correlates to central venous pressure and can be useful in differentiating different shock states.[131,132] In patients with undifferentiated dyspnea, cardiac US in combination with lung US can differentiate acute heart failure from other etiologies of shortness of breath and guide acute management.[133,134] Based on a systematic review and meta-analysis of 31 studies, US was the single most useful test for diagnosing acute heart failure.[134] Findings of right heart strain on EP-performed cardiac US correlates well with cardiology interpretation.[135] In patients with pulmonary embolism, cardiac US used for the detection of right heart strain is specific and can be used to risk stratify patients.[136-138]

Deep Vein Thrombosis

Over the past 21 years several studies including systematic reviews and meta-analysis have been performed regarding emergency physician performed limited venous compression sonography for the evaluation of DVT. The overall congruity on the limited compression ultrasound in the evaluation of DVT consistently demonstrated a pooled sensitivity between 90–95% and specificity between 91–98%.[139-141]

In 2018, a multidisciplinary panel of experts convened at the Society of Radiologists Ultrasound Consensus Conference to provide recommendations for the most appropriate point-of-care study for the diagnosis of DVT ultrasound.[142] The consensus from the conference deemed the extended compression ultrasound (ECUS) also referred to as the 3-point compression ultrasound to be the most appropriate point-of-care examination for the diagnosis of DVT.[142,143] The ECUS has also been compared to the 2-point compression ultrasound (2-CUS) which does not include evaluation of the isolated femoral vein. Despite the recommendations from conference, a meta-analysis performed by Lee et al. demonstrated that 2-point and 3-point POCUS were both excellent methods for the diagnosis of DVT with similar sensitivity and specificity in various settings with a multitude of performers.[141] The pitfall to the 2-CUS, however, has been reported to miss 5% to 7% of isolated femoral vein thrombosis.[144-146]

The advantages for using POCUS in the evaluation of DVT is that it can be performed immediately at the bedside with a device that is readily available. This has been demonstrated to provide a faster disposition for patients undergoing POCUS for DVT assessment when compared with radiology department DVT assessment (95 vs. 225 minutes).[147]

Hepatobiliary System

The use of emergency US for hepatobiliary disease has centered on biliary inflammation and biliary obstruction. With the combination of portability, lack of ionizing radiation, and acceptable test characteristics, US is considered the preferred initial imaging modality for patients suspected of having acute cholecystitis.[148] POCUS by emergency physicians facilitates ED patient throughput: A retrospective review of 1252 cases of suspected cholecystitis demonstrated that bedside emergency physician US vs radiology US evaluation decreased length of stay by 7% (22 minutes) overall, and up to 15% (52 minutes) when patients were evaluated during evening or nighttime hours.[149]

POCUS for the diagnosis of acute cholecystitis is operator dependent and the reported sensitivities and specificities in the literature vary widely. Although many sonographic criteria for acute cholecystitis exist (including gallstones, thickened gallbladder wall, pericholecystic fluid, sonographic Murphy's sign, and common bile duct dilatation), gallstones are present in 95-99% of acute cholecystitis cases.[150] The finding of gallstones is quite accessible to the EP using bedside US, and may be placed into the context of an individual patient's clinical presentation to determine if acute cholecystitis if present. The test characteristics for gallstone detection by bedside US are: sensitivity 90-96%, specificity 88-96%, positive predictive value 88-99% and negative predictive value 73-96%.[151-154] In patients without risk factors for acalculous cholecystitis, one study reported the absence of gallstones on POCUS exam performed by emergency physicians effectively rule-out acute cholecystitis, with excellent negative predictive value (100%).[150] A more recent prospective validation study of the Bedside Sonographic Acute Cholecystitis Score (SAC),incorporating patient symptoms as well as physical and sonographic exam findings by emergency physicians with diverse levels of training, reported 100% sensitivity in ruling out acute cholecystitis when the SAC score was <2 and 95.7% when >7.[155]

The measurement and interpretation of common bile duct dilatation (CBD) to assess for complicated obstructive biliary pathology is considered more technically challenging than simply determining the presence or absence of gallstones. However, one prospective observational study showed that after a focused hepatobiliary training, novice emergency medicine residents attained a moderate level of agreement (Cohen Kappa = 0.79) with expert radiologists in detecting abnormal CBD dilation >6 mm, but only weak agreement in regard to the overall measurements themselves (Cohen's Kappa = 0.45).[156] Additionally, another prospective emergency medicine study demonstrated the sensitivity and specificity of CBD dilation for complicated biliary pathology (CBP) to be only 23.7% and 77.9%, respectively, while none of the 39 patients with CBP had isolated CBD dilation with normal lab values.[157] When the diagnosis of complicated gangrenous cholecystitis is considered, defects of wall enhancement on contrast enhanced ultrasound has been reported to have a sensitivity between 85-91% and a specificity of 67.5-84.8% cholecystitis.[158]

Musculoskeletal Ultrasound

Clinical ultrasonography is useful for an array of musculoskeletal applications. Clinical ultrasound can be utilized to identify shoulder dislocations and reductions with one recent systematic review and meta-analysis reporting 100% sensitivity and 100% specificity.[3] This same meta-analysis found that POCUS was 96.8% sensitive and 99.7% specific for diagnosing associated fractures.[3] Another study found that POCUS reduced time-to-diagnosis by 43 minutes, while only requiring 19 seconds to perform.[159] Ultrasound can also diagnose joint effusions and guide needle insertion for arthrocentesis or injection.[160] One systematic review and meta-

analysis of knee arthrocentesis found that POCUS increased accuracy (risk ratio 1.21), increased aspiration volume (weighted mean difference [WMD] 17 mL), and had less procedural pain (WMD -2.24/10) with no difference in procedural duration.[161] Another study of emergency medicine residents randomized to ultrasound-guidance versus landmark technique for aspiration of the hip, ankle, and wrist in a cadaver model found that ultrasound guidance had higher success rates (96% vs 89%) and fewer aspiration attempts (median 1 vs 2).[162] For long bone fractures, one systematic review reported that POCUS had 64.7% to 100% sensitivity and 79.2% to 100% specificity in adults.[163] In pediatric patients, POCUS is 93.1% sensitive and 92.9% specific for long bone fractures.[163] If a fracture is present, ultrasound can also be utilized to guide the hematoma block.[164]

Clinical ultrasonography is also valuable for identifying muscle injuries, such as ruptures and tears.[165-168] One study found that ultrasound had similar accuracy to MRI for diagnosing muscular tears.[169] Ultrasound can also be used to diagnose infectious causes of muscle pathology such as myositis and pyomyositis.[170,171] In a retrospective review of 65 cases of surgically-proven pyomyositis, sonographic results were consistent with operative findings in 95% of cases.[172] Clinical ultrasound can be a valuable tool for tendon injuries, as well. In a prospective, multicenter study by Wu et al. Emergency medicine physicians were able to diagnose extremity tendon injuries using POCUS with 100% sensitivity and 95% specificity.[173] There is growing evidence regarding the role of ultrasound for diagnosing tenosynovitis, with one study reporting that ultrasound was 94% sensitive and 65% specific.[174,175]

Ocular

Ocular ultrasound can be a valuable tool for assessing the posterior segment of the eye, as well as the lens, pupils, and as a surrogate for increased intracranial pressure (ICP). Within the posterior segment, one meta-analysis found that POCUS was 94.2% sensitive and 96.3% specific for retinal detachment.[176] Another large multicenter trial of emergency medicine clinicians reported 96.9% sensitivity and 88.1% specificity for retinal detachment.[177] That study also reported 81.9% sensitivity and 82.3% specificity for vitreous hemorrhage, as well as 42.5% sensitivity and 96.0% specificity for vitreous detachment.[177] Another recent meta-analysis found that POCUS was 100% sensitive and 97% specific for lens dislocation, and 100% sensitive and 99% specific for intraocular foreign body.[178]

Beyond the posterior segment, ocular ultrasound may also be beneficial in the evaluation of patients with eyelid edema or trauma that would otherwise limit inspection of the orbit. Studies have demonstrated the role of ocular ultrasound for the examination of extraocular movement and pupillary assessment.[179] Ultrasound can also be utilized as a non-invasive surrogate for ICP assessment via measurement of the optic nerve sheath diameter (ONSD) with a recent systematic review finding ONSD was 90% sensitive and 85% specific when compared to direct ICP monitoring.[180] Furthermore, ultrasound is 82% sensitive and 76% specific for the detection of optic disc elevation or papilledema which may assist in the identification of long standing elevated ICP seen in patients with idiopathic intracranial hypertension.[181]

Pregnancy

Emergency ultrasound is used to evaluate the symptomatic pregnant patient and is particularly valuable in the symptomatic first trimester pregnant patient as it is able to provide a definitive diagnosis in 80% of cases.[182] The most common ultrasonographic findings in the first trimester include an indeterminate location of pregnancy, an intrauterine pregnancy, ectopic pregnancy, molar pregnancy, or fetal demise. An ectopic pregnancy is suggested if the endomyometrial mantle (EMM) thickness is less than 8mm, regardless of the Beta-hCG value.[183,184] Identification of ectopic pregnancy in the ED has been shown to expedite care and decrease the time to surgery.[185] In addition, visualization of free fluid in Morison's pouch in patients with suspected ectopic pregnancy can predict the need for operative intervention.[186]

Identification of an intrauterine pregnancy by emergency ultrasound is a powerful rule out test for ectopic pregnancy as supported by evidence from a systematic review and meta-analysis of 2,057 patients which found that emergency ultrasound had a sensitivity of 99.3%, NPV 99.96%, and negative likelihood ratio of 0.08 for ruling out ectopic pregnancy.[187] Emergency ultrasound has also been shown to have high accuracy for dating in the first trimester when compared to radiology ultrasound.[188] In addition, symptomatic first trimester pregnant patients who received a focused emergency ultrasound compared to comprehensive ultrasound had significantly decreased length of stay.[189] In the second and third trimester, emergency ultrasound can be used to evaluate for signs of uterine rupture.[190-192] In the postpartum period, emergency ultrasound can be used to diagnose retained placenta and help to expedite expert consultation and definitive care.[193]

Procedural Guidance

Ultrasound guidance has been utilized for a wide array of common ED procedures. Ultrasound has been demonstrated to improve success rates and reduce complications for internal jugular, subclavian, and femoral central venous access,[194-196] with the Agency for Healthcare Research and Quality (AHRQ) reporting this as one of the top 11 strategies to increase patient safety in the United States. Similar benefits have been seen with arterial line placement, where US has been shown to increase first-attempt success rates (relative risk [RR] 1.31), reduce number attempts to success (mean difference [MD] -1.26), shorten mean time to success (MD -43.158 seconds), and lower complication rates (RR 0.39).[5] A 2021 meta-analysis comparing US-guided PIV with the landmark-based approach reported that US was associated with greater likelihood of successful cannulation (odds ratio [OR] 2.1), fewer attempts (standardized MD -0.272), and improved patient satisfaction (standardized MD 1.467/10) with no difference in procedural length.[4]

Beyond vascular access, US can be a valuable adjunct for lumbar puncture (LP) with one recent meta-analysis reporting increased overall success (OR 2.22), fewer traumatic LPs (risk difference -16.4%), shorter time to successful LP (adjusted MD -1.80 minutes), fewer mean needle passes (adjusted MD -0.61), and reduced patient pain scores (adjusted MD -2.53/10) in the US group.[6]

The data supporting ultrasound-guided abdominal paracentesis is less robust; however, ultrasound has been shown to improve procedural success and decrease complications. Ultrasound is superior to physical exam for determining the presence of ascites pre-procedurall,[197] and using ultrasound-guidance for paracentesis leads to improved success rates compared with the landmark-based approach (95% vs 61%), decreased bleeding complications (OR 0.32) and decreased hospital costs (MD -$6,262).[198,199] Similarly, ultrasound-guidance for thoracentesis has been demonstrated to reduce complications, with one meta-analysis reporting decreased pneumothorax rates when US was used (OR 0.3).[200,201] One randomized control trial evaluated the use of US in the diagnosis and management of peritonsillar abscess.[202] Patients in the US cohort were successfully aspirated more frequently (LR 2.0), had fewer consults (absolute difference -43%), and more accurate diagnosis (LR 2.8). Finally, ultrasound-guided pericardiocentesis has become the standard within cardiology (rather than a blind technique) based on several large observational trials which demonstrated a high success rate (97-98%) and a low complication rate (4.7-7%).[203,204] Though emergency medicine specific studies are lacking, this supports the role for ultrasound-guidance of pericardiocentesis.

Skin and Soft Tissue Ultrasound

Point-of-care ultrasound is a valuable tool for the diagnosis and management of skin and soft tissue abscesses. A recent systematic review and meta-analysis found that POCUS was 94.6% sensitive and 85.4% specific for differentiating abscess from cellulitis.[205] Among those with a high pretest probability, POCUS is 93.5% sensitive and 89.1% specific.[205] Among those cases that are clinically unclear, POCUS is significantly more accurate (91.9% sensitivity, 76.9% specificity) compared with physical examination alone (77.6% sensitivity,

61.3% specificity).[205,206] Moreover, the addition of POCUS led to a change in management in 10.3% of cases with a number-needed-to-treat of 10.[205] Once an abscess is suspected, POCUS can identify nearby vasculature and help differentiate it from a pseudoaneurysm using color Doppler.[207] POCUS can also help identify the depth and margins of the abscess to guide the placement of the incision and assess for adequate drainage.[207]

POCUS can also be used for the diagnosis and management of skin and soft tissue foreign bodies. It can detect non-radiopaque foreign bodies that could be missed on standard radiographs with one systematic review reporting that POCUS was 72% sensitive and 92% specific for foreign bodies.[208] It can also be used for real-time guidance of foreign body removal and can assist in detecting surrounding structures.

Finally, clinical ultrasound can help diagnose more dangerous conditions such as necrotizing fasciitis (NF). Although the concern for NF is typically a clinical diagnosis, POCUS can assist in earlier diagnosis, especially in patients who are too unstable for other imaging modalities (eg, CT, MRI). One study found that POCUS was 100% sensitive and 98.2% specific,[209] while another study reported a sensitivity of 88.2% and specificity of 93.3% for the diagnosis of NF.[210] In resource-limited settings without CT or MRI, clinical ultrasound can assist clinicians along with clinical gestalt in the diagnosis of NF. It is also easily repeatable and can be used to evaluate for progression of NF at the bedside.

Testicular Ultrasound

Ultrasound is the first line diagnostic study in addition to the clinical history and physical exam in the evaluation of the acute scrotum in the ED.[211] Emergent and urgent pathologic etiologies identified via ultrasound include testicular torsion, torsion of the testicular or epididymal appendage, infections of the scrotum, epididymis, and testis, strangulated herniation of abdominal contents into the scrotum, as well as traumatic injuries of the testicle.[211] A recent review recommends grayscale and color Doppler to remain the mainstays of acute scrotal evaluation, while contrast enhanced ultrasound and elastography are new techniques that can improve sensitivity in equivocal cases.[212]

Ultrasound has been found to be highly accurate in the diagnosis of pathology in the patient presenting with acute scrotum in both the adult and pediatric populations.[213,214] Accuracy for adult EPs in evaluation of the acute scrotum have been found to be highly sensitive (95%) and specific (94%) when compared with radiology ultrasound.[215,216] Accuracy for pediatric EPs in evaluation of the acute scrotum have also been found to be highly sensitive, with 100% sensitivity and 99.1% specificity in the diagnosis of testicular torsion.[217] A recent systematic review and meta-analysis indicates that the "whirlpool" sign is pathognomonic in adult patients suspected of having testicular torsion, but less useful in neonatal populations.[218] Clinical ultrasound may be especially useful in patients suspected of Fournier's gangrene as it has comparable sensitivity with computed tomography and can be performed at the bedside for unstable patients.[219] A review of cases shows that testicular ultrasound is also highly sensitive and specific (100% and 93.% respectively) in the diagnosis of testicular rupture in the testicular trauma.[220]

Thoracic/Airway

Considerable evidence supports the use of clinical ultrasonography to diagnose a variety of thoracic conditions such as pulmonary edema, pneumonia, pulmonary contusion, and pleural effusion. These conditions can be assessed dynamically over time in response to therapeutic interventions such as diuresis, non-invasive ventilation, and antibiotics. POCUS assessment for B-lines is 83-92% sensitive and 84-92% specific for pulmonary edema and congestive heart failure.[1,221] POCUS is 85-92% sensitive and 93% specific for diagnosing pneumonia,[222,223] including 83-96% sensitivity and 84-93% specificity in children.[224,225] Amidst the global pandemic, thoracic POCUS has demonstrated 91% sensitivity and 63% specificity for COVID-19 in the emergency department.[226] Additionally, POCUS evaluation for a focal B-pattern in patients

with thoracic trauma is 92% sensitive and 89% specific for pulmonary contusion.[227] Lastly, POCUS is 91% sensitive and 92% specific for the diagnosis of pleural effusion.[228] For patients with undifferentiated dyspnea, early performance of POCUS can decrease time to diagnosis and disposition.[229]

Ultrasonography has also been increasingly recognized as a valuable tool for airway assessment and management.[230] Prior to endotracheal intubation, POCUS can be utilized to predict difficulty of intubation, with one study reporting that POCUS outperformed several common clinical decision tools.[231] After an intubation has been performed, one large meta-analysis found that transtracheal ultrasound identified endotracheal versus esophageal intubation with 99% sensitivity and 97% specificity.[232] This accuracy has remained consistent regardless of transducer, technique, or endotracheal tube size.[233, 239] Lung sliding can be used as an alternate tool to assess for endotracheal tube location, as well as for endobronchial intubation.[238,239] This has been supported by the American Heart Association guidelines for Advanced Cardiac Life Support, which delineate clinical ultrasonography as a reasonable tool for confirming endotracheal intubation.[240] Finally, ultrasound can be utilized to identify the cricothyroid membrane in advance of a difficult intubation and even guide cricothyroidotomy in patients requiring a surgical airway.[241,243]

Trauma

The use of US in trauma patients to detect intra-abdominal, intrathoracic, or pericardial hemorrhage has been incorporated in most trauma center protocols and is a part of the ATLS guidelines.[244] A review of 11 prospective studies shows that the focused assessment with sonography in trauma (FAST) examination has sensitivities ranging from 87-98% and specificities 99% -100% in detecting intraperitoneal fluid in patients who suffer from blunt trauma.[245] The evaluation of the thorax for injury with ultrasound defines the extended focused assessment with sonography in trauma (EFAST) examination. The scope of the EFAST includes the detection of pneumothorax, intrathoracic hemorrhage, and/or pulmonary contusions.[246,247] Ultrasound is more sensitive than chest radiograph in detecting a pneumothorax with lung point being a very specific sign, however, delaying management to identify the lung point is not recommended.[248]

The EFAST examination can be used to evaluate penetrating trauma for thoracic and cardiac injuries with high sensitivities for detecting pathology that require acute intervention. A retrospective review of patients with penetrating thoracic trauma demonstrated 100% sensitivity for the detection of pericardial effusion which expedited diagnosis and management.[124] Alternatively, the evaluation for penetrating abdominal trauma may vary by case but evidence demonstrates a low sensitivity therefore making it a limited screening tool.[249]

The use of the EFAST examination in trauma has improved patient care and resource utilization by decreasing the time to operative management, decreasing patient's exposure to ionizing radiation, shortening their length of stay in the hospital, and lowering patient costs.[250, 251]

Ultrasound Guided Nerve Blocks

Ultrasound-guided peripheral nerve blocks are an important part of a multi-modal approach to pain management in the ED.[252] Nerve block indications have continued to expand, and studies have demonstrated the benefits of EP performed nerve blocks including improved pain control, decreased opioid use, and decreased length of stay, to name a few. Overall safety for nerve blocks is also high, with data suggesting the risk of peripheral nerve injury being as low as 0.03% and local anesthetic systemic toxicity occurring in 1.3 per 10,000 patients.[253,254] The most commonly performed nerve blocks include brachial plexus blocks, truncal blocks, hip blocks and extremity blocks.

Brachial plexus blocks, including the superficial cervical plexus, RAPTIR, interscalene and supraclavicular brachial plexus block, have been used for shoulder dislocation reductions, proximal humerus fractures, elbow, wrist and hand lacerations and fractures. One randomized study demonstrated shorter length of stay using the interscalene brachial plexus block for shoulder dislocation reduction compared to moderate sedation.[255]

Truncal blocks, including the serratus anterior plane block (SAPB), erector spinae plane block (ESP) and transversus abdominis plane block have been used for rib fractures, thoracostomy tube placement, herpes zoster, renal colic, pancreatitis, lumbar transverse process fractures, and mechanical back pain.[256] One RCT showed significant reduction in pain scores up to 24 hours after the block in patients who received a SAPB block compared to a control group receiving tramadol.[257] Studies have found that patients who received ESP for rib fractures had a significant reduction in pain scores[258] and improvement in inspiratory capacity.[256] Another randomized study found that patients with renal colic who received an ESP block compared to those who received an NSAID had significantly better pain control, lower rates of opioid consumption and greater patient satisfaction.[259] Transversus abdominis plane blocks have been used for pain control from post-op hernias, abdominal wall abscesses, and appendicitis.[260,261]

Nerve blocks such as the fascia iliaca, femoral nerve, and pericapsular nerve group block (PENG) are used for pain control for hip fractures. These blocks are an important component of multimodal analgesia that is recommended by the American Academy of Orthopaedic Surgeons[262] and recognized as best practice by the American College of Surgeons.[263] Systematic reviews of multiple randomized controlled studies have found that patients who received a nerve block for hip fracture had reduced pain on movement, decreased rates of delirium and chest infection, and decreased time to mobilization.[264] When performed in the ED, fascia iliaca blocks have been shown to decrease opioid consumption, length of stay, and hospital admission within 30 days of hip fracture.[265,266] In addition, the PENG block has been successfully used to control pain from non-operative pelvic fractures.[267]

Upper extremity forearm blocks and lower extremity blocks such as the popliteal sciatic, tibial, transgluteal sciatic, sural, and adductor canal blocks have been performed for extremity injuries including fractures, burns, abscesses, dislocation reductions, lacerations, and radicular leg pain.[268,269] One small randomized study found that patients with hand injuries randomized to receive forearm nerve blocks had significant reduction in pain compared to the control group who received usual care.[270]

Urinary Tract

The use of EUS in the urinary tract has primarily been used for detection of hydronephrosis and bladder status but has also been used to evaluate for renal masses, cystic structures, and foley catheter placement. A multispecialty panel with representation from EM, urology, and radiology recommends US evaluation of the patient with suspected renal colic in conjunction with urinalysis in almost all clinical scenarios except for the extreme elderly.[271] Bedside renal US can decrease ED length of stay without increasing patient bounce backs in patients suspected of having renal colic.[272] A large systematic review and meta-analysis of clinical renal US showed a pooled sensitivity of 70.2% and specificity of 75.4%[271,273] for the evaluation of renal colic. When only moderate or severe hydronephrosis were considered, the specificity increased to 94.4%.[271] Accuracy of bedside US by fellowship trained EP is comparable to that of radiology US and CT imaging for imaging patients with suspected renal colic.[274,275] Furthermore, ultrasound evaluation of the patient with renal colic has not shown to miss clinically significant alternate diagnoses in the majority of patients.[271,274,276]

Evidence on evaluation of the bladder primarily focuses on volumetric measurements in the clinical setting. Volumetric measurements of the bladder have been useful especially in pediatric populations where it has shown to improve first pass success of catheterization.[277]

Appendix 2. Evidence for Advanced Emergency Ultrasound Applications

Adnexal Pathology

The use of CUS to evaluate pelvic pain in the non-pregnant female may facilitate the diagnosis of adnexal pathology such as ovarian torsion, tubo-ovarian abscess (TOA), and ovarian cysts. The evaluation of the adnexa is an advanced skill that requires appropriate training.[278] Although transabdominal ultrasound may be used to identify these structures, transvaginal ultrasound is the preferred modality to visualize the adnexa. The use of transvaginal ultrasound has been shown to improve physician confidence in the evaluation of nonpregnant women with pelvic pain as compared to a traditional bimanual exam.[279] Ovarian torsion is challenging to diagnose and is often a missed diagnosis in the ED.[280] The use of bedside ultrasound may expedite identifying ovarian cysts, presence of venous and/or arterial blood flow, and an enlarged ovary, which may be an early sign of torsion despite visualizing blood flow.[281] Differentiating pelvic inflammatory disease from TOA is important for management decisions, and the sensitivity of ultrasound for the diagnosis of tubo-ovarian abscess ranges from 56-93%, with specificity ranging from 86%-98%.[282] The use of CUS to rapidly identify TOA may help expedite treatment.[283] Clinical US may also lead to an early diagnosis of rare adnexal conditions such as hyperstimulation syndrome and lead to rapid treatment.[284]

Advanced Echocardiography

Advanced echocardiography is beneficial in the evaluation of emergency department patients, particularly in the critically ill when basic echocardiography is not definitive. Examples include recognizing early tamponade physiology,[285,286] acute diastolic heart failure,[287,288] acute pulmonary embolism,[289-291] myocardial injury in acute coronary syndrome,[292,293] and hemodynamic states like fluid tolerance and responsiveness.[294,295] These assessments use spectral or tissue Doppler over or near valves, with calculations based on amplitude ratios or flow pattern tracings.

Transthoracic echocardiography during cardiac arrest is another emerging application. Early literature focused on echocardiographic cardiac standstill as a prognostic factor to discontinue resuscitation. However, ultrasonographic determination of cardiac standstill may be difficult,[296] and more attention has been centered around using echocardiography to guide ACLS. Obtaining views before the pulse check pause prevents inadvertent delay over the ten second window.[297] Focusing on views of the left ventricle allows for assessment of CPR compression location and adequacy.[298] Fine ventricular fibrillation or tachycardia appear with subtle tremulous movements of ventricular free walls and valves.[298,299] Visualization of these shockable rhythms is useful as they may not always appear on patient monitors. These concepts are mirrored in emerging transesophageal literature.

Contrast-Enhanced Ultrasound

Contrast-enhanced ultrasound (CEUS) has several potential applications in the acute care setting.[300] The use of ultrasound contrast agents (UCAs), microbubbles that are injected intravascularly, is FDA approved for use in echocardiography and evaluation of liver lesions in adults, as well as vesicoureteral reflux evaluation in children. UCA use in the evaluation of solid organ injury in blunt abdominal trauma is an off-label application that is well-supported in European literature. In 2009, Catalano et al published a study of 156 patients with blunt abdominal trauma, showing ultrasound contrast improved the sensitivity of identifying renal trauma from 36% to 69%, liver trauma from 68% to 84%, and splenic trauma from 77% to 93%.[301] Specificity of identifying injury improved from 98% to 99% in renal trauma, 97% to 99% in liver trauma, and 96% to 99% in splenic trauma.[301] Serious adverse events occur rarely. In a study of 30,222 patients, 0.02% had an adverse reaction and 2 patients (0.007%) had early signs of anaphylaxis that improved with

treatment.[302] Future possible applications beyond trauma include the evaluation of abdominal aortic aneurysm rupture, sono-thrombolysis, and assessment of tissue perfusion.[303-305]

Transcranial Doppler

Transcranial Doppler (TCD) through the transtemporal window may be incorporated as an adjunct imaging modality for the neurocritical patient. TCD may be used to evaluate for mass effect causing brain midline shift,[306] vasospasm after subarachnoid hemorrhage (SAH),[307] diagnosis and thrombolytic efficacy in acute ischemic stroke,[308] elevated intracranial pressure,[309] and cerebral circulatory arrest.[310] The presence and extent of midline shift may be assessed by measuring the distance from the ipsilateral temporal bone to the midline third ventricle, and then repeating that measurement from the contralateral temporal bone. After suffering a SAH, vasospasm may be suggested by increased blood flow velocity in the middle cerebral artery (MCA) due to the inverse relationship between cerebral blood vessel diameter and velocity. In the setting of acute ischemic stroke, MCA blood flow velocities may be used to suggest the success or failure of recanalization after thrombolysis. Lastly, detection and dynamic evaluation of elevated intracranial pressure can be examined through the semi-quantitative relationship between systolic and diastolic blood flow velocity as intracranial pressure rises and cerebral perfusion pressure falls. The end-stage flow patterns may serve as an adjunct for determining cerebral circulatory arrest and brain death.

Transesophageal Echocardiography

With the same goal-directed framework of CUS applications, focused or resuscitative transesophageal echocardiography (TEE) has been increasingly utilized for the evaluation of intubated critically-ill patients. Several observational studies performed in the late 1990s and early 2000s demonstrated the feasibility and clinical impact of TEE to identify reversible pathologies and guide therapies in patients with cardiac arrest and peri-arrest states in the ED,[311] intensive care units,[312,313] and operative settings.[314-7]

Subsequent studies have established that emergency physicians can obtain focused TEE images after a brief structured simulation-based training.[318,319] In addition to the same diagnostic, prognostic, and therapy-guiding role provided by TTE, TEE presents unique advantages in the resuscitative setting, including the ability to obtain high-quality images regardless of body habitus, presence of subcutaneous emphysema, use of mechanical ventilation or ongoing cardiopulmonary resuscitation (CPR). In a retrospective observational study, Arntfield et al reported the successful implementation of a focused ED-TEE program demonstrating that TEE was feasible, safe, and clinically influential.[320] In 78% of the exams performed, there was a diagnostic impact on case management, which was commonly cited as excluding etiologies of cardiac arrest. An analysis based on TEE diagnoses suggested that 55.6% of these exams had findings that could not be easily visualized on TTE.

In a prospective observational study of out-of-hospital cardiac arrest (OHCA) patients, Teran et al found resuscitative TEE could be performed early in the resuscitation, and found TEE to have a diagnostic, therapy-guiding or prognostic impact in 97% of cases. Diagnoses included fine ventricular fibrillation, right ventricular dilation, and the presence of intracardiac thrombus. In addition to the diagnostic applications of resuscitative TEE, this modality offers the unique possibility to visualize the heart during the performance of chest compressions, thus the potential to optimize the quality of CPR. In a prospective ED study, the hand position used during external chest compressions resulted in compression of the left ventricular outflow tract (LVOT) and the aortic root, but not the left ventricle (LV), and found a correlation between the area of maximal compression (AMC) and the stroke volume (SV), where compressions closer to the LV produced higher a SV.[320] Consistent evidence was reported in recent years by Cha et al, Teran et al, and Catena et al.[321-323] Taken together, these studies support the idea that TEE can be used by clinicians to optimize the quality

of chest compressions in real time during CPR, by identifying and correcting compression of the outflow tract, with the potential to improve outcomes.

Studies in the ED setting have also shown that TEE could shorten chest compression interruptions,[324] and guide resuscitative procedures such as guidance of intravenous pacemaker placement,[325] and extracorporeal membrane oxygenation (ECMO).[326,327]

Appendix 3. Clinical Ultrasound Learning Objectives

Listed below are recommended learning objectives for a comprehensive CUS clinician curriculum, rotation, or series of training courses. For detailed indications, limitations, protocols, documentation requirements, and other important details for each application, please refer to the ACEP Emergency Ultrasound Imaging Criteria Compendium.[12]

Introduction
- Distinguish between consultative, clinical, point-of-care, and emergency ultrasound (EUS).
- Recognize primary CUS applications.
- Discuss support for CUS from key organizations including ACEP, AMA, ABEM, SAEM, and AIUM.
- Describe ACEP recommendations on training and credentialing in CUS.

Physics & Instrumentation
- Explain ultrasound physics relevant to CUS:
  Piezoelectric effect
  Frequency
  Resolution
  Attenuation
  Echogenicity
  Doppler - color and spectral
  Aliasing
- Operate the EUS system as needed to obtain and interpret images adequate for clinical decision making including:
  Knobology
  Image mode
  Gain
  Time gain compensation (TGC)
  Focus
  Transducer types
- Recognize common ultrasound artifacts including:
  Reverberation
  Side lobe
  Mirror
  Shadowing
  Enhancement
  Ring-down

Trauma (Focused Assessment by Sonography in Trauma (FAST)
- Describe the indications, clinical algorithm, and limitations of CUS in blunt and penetrating thoracoabdominal trauma.
- Perform the CUS protocol for Trauma in both primary and secondary surveys.
- Identify relevant US anatomy including the pleura, diaphragm, inferior vena cava, pericardium, liver, spleen, kidneys, bladder, prostate and uterus.
- Recognize pathologic findings and pitfalls in the evaluation of pneumothorax, hemothorax, pulmonary contusion, hemopericardium, cardiac activity, volume status, and hemoperitoneum.
- Integrate Trauma CUS findings into individual patient, departmental, and disaster management.

Female Pelvis
- Transabdominal and/or transvaginal approach

- Basic obstetrical CUS

First-Trimester Pregnancy
- Describe the indications, clinical algorithm, and limitations of CUS in first-trimester pregnancy pain and bleeding.
- Understand the utility of quantitative B-HCG in the evaluation of first-trimester pregnancy pain and bleeding.
- Perform CUS protocols for transabdominal and transvaginal views as appropriate, including fetal heart rate and gestational age measurement techniques.
- Identify relevant US anatomy including the cervix, uterus, adnexa, bladder and cul-de-sac.
- Recognize the relevant findings and pitfalls when evaluating for intrauterine and ectopic pregnancy:
  - Early embryonic structures including the gestational sac, yolk sac, fetal pole, and heart
  - Location of embryonic structures in pelvis
  - Embryonic demise
  - Molar pregnancy
  - Findings of ectopic pregnancy including pseudogestational sac, free fluid, and adnexal masses

Advanced Evaluation
- Basic gynecological CUS
- Ovarian cysts, fibroids, tubo-ovarian abscesses
- Ovarian torsion
- Ectopic pregnancy
- 2nd and 3rd trimester OB

- Integrate pregnancy EUS findings into individual patient and departmental management.

Aorta
- Describe indications, clinical algorithm, and limitations of CUS in the evaluation of abdominal and thoracic aortic pathology.
- Perform CUS protocols to evaluate the abdominal and thoracic aorta including measurement techniques.
- Identify relevant US anatomy including the aorta with major branches, inferior vena cava, and vertebral bodies.
- Recognize pathologic findings and pitfalls when evaluating for abdominal and thoracic aortic aneurysm and dissection.
- Integrate Aorta EUS findings into individual patient and departmental management.

Cardiac and Hemodynamic Assessment
- Describe the indications and limitations of cardiac CUS.
- Perform standard CUS windows (subcostal, parasternal, and apical) and planes (four chamber, long and short axis).
- Identify relevant US anatomy including pericardium, cardiac chambers, valves, descending aorta and inferior vena cava.
- Estimate qualitative left ventricular function and central venous pressure to guide hemodynamic assessment of patient.
- Recognize cardiac arrest, pericardial effusions with or without tamponade, and dilation of the aortic root or the descending aorta.
- Advanced evaluation
  - Acquire view of the aortic arch and recognize aortic arch dissection and/or aneurysm.
  - Identification of right ventricular dysfunction.
  - Assessment of cardiac output and fluid responsiveness.

- Procedural guidance: pericardiocentesis, transvenous pacer, and central venous catheter placement
- Integrate Emergency echocardiography findings into individual patient and departmental management.

Hepatobiliary
- Describe the indications and limitations of CUS of the biliary tract.
- Perform CUS protocols to evaluate the biliary tract.
- Identify relevant ultrasound (US) anatomy including the gallbladder, portal triad, inferior vena cava, and liver.
- Recognize the relevant findings and pitfalls when evaluating for cholelithiasis and cholecystitis.
- Advanced evaluation
  - Common bile duct pathology (dilatation and choledocholithiasis)
  - Liver pathology (masses, pneumobilia, hepatomegaly)
  - Portal vein abnormalities
  - Pancreas pathology
- Integrate EUS of the biliary tract into individual patient and departmental management.

Urinary Tract
- Describe the indications and limitations of CUS of the kidneys and bladder.
- Perform CUS protocols to evaluate the urinary tract.
- Identify relevant US anatomy including the renal cortex, renal pelvis, ureter, bladder, liver, spleen, and uterus or prostate.
- Recognize the relevant findings and pitfalls when evaluating for hydronephrosis, renal calculi, renal masses, bladder volume, pregnancy, and Foley catheter evaluation.
- Integrate EUS of the urinary tract into individual patient and departmental management.

Deep Vein Thrombosis
- Describe the indications and limitations of CUS for the detection of deep venous thrombosis.
- Understand the differences between lower extremity venous CUS and radiology lab-or vascular lab-performed "Duplex evaluation"
- Perform CUS protocols for the detection of deep venous thrombosis of the upper and lower extremities including:
  - Vessel identification
  - Compression
  - Doppler imaging of respiratory variation and augmentation.
- Identify relevant US anatomy of the upper and lower extremities including the deep venous and arterial systems, major nerves, and lymph nodes.
- Recognize the relevant findings and pitfalls when evaluating for deep venous thrombosis.
- Integrate EUS for deep venous thrombosis into individual patient and departmental management.

Skin and Soft Tissue
- Describe the indications and limitations of skin and soft tissue EUS.
- Perform EUS protocols for the evaluation of skin and soft tissue pathology.
- Identify relevant US anatomy including:
  - Skin
  - Adipose
  - Lymph Nodes
- Recognize the relevant findings and pitfalls when evaluating the following:
  - Soft tissue infections: Abscess versus cellulitis
  - Subcutaneous fluid collection identification
  - Foreign body location and removal

- Integrate skin and soft tissue EUS findings into individual patient and departmental management.

Musculoskeletal
- Describe the indications and limitations of musculoskeletal EUS.
- Perform EUS protocols for the evaluation of musculoskeletal pathology.
- Identify relevant US anatomy including:
  - Tendons and Ligaments
  - Muscles
  - Bones
  - Joints
- Recognize the relevant findings and pitfalls when evaluating the following:
  - Tendon injury (laceration, rupture)
  - Fractures
  - Joint identification
- Integrate musculoskeletal EUS findings into individual patient and departmental management.

Thoracic/Airway
- Describe the indications and limitations thoracic CUS
- Perform CUS protocols for the detection of:
  - Pneumothorax
  - Pleural Effusion
  - Interstitial Lung Fluid (CHF, ARDS, pneumonia, pulmonary contusion)
- Identify relevant US anatomy of thoracic structures.
- Recognize the relevant findings and pitfalls when evaluating for thoracic pathology
- Recognize the sonographic findings of tracheal and esophageal anatomy, especially in regard to EM procedures
- Integrate thoracic CUS findings into individual patient and departmental management.

Ocular
- Describe the indications, limitations, and relative contraindications of ocular CUS.
- Perform CUS protocols for the detection of
  - Vitreous hemorrhage
  - Posterior vitreous detachment
  - Retinal detachment
  - Optic nerve sheath diameter measurement
  - Optic disc evaluation
- Advanced evaluation
  - Lens pathology
  - Foreign body
  - Globe rupture
  - Retrobulbar hematoma
  - Central retinal artery/vein occlusion
  - Subretinal hemorrhage
- Light reflex
  - Identify relevant US anatomy of the globe and orbital structures.
  - Recognize the relevant findings and pitfalls when evaluating for ocular pathology.
- Integrate ocular CUS into individual patient and departmental management.

Procedural Guidance
- Describe the indications and limitations when using US guidance for bedside procedures.
- Perform CUS protocols for procedural guidance including both transverse and longitudinal approaches when appropriate. These procedures may include:
  - Vascular access: Central and peripheral
  - Confirmation of endotracheal intubation
  - Pericardiocentesis
  - Paracentesis
  - Thoracentesis
  - Foreign body detection and removal
  - Evaluation and aspiration/drainage of body fluid
  - Arthrocentesis
  - Pacemaker placement and capture
  - Abscess identification and drainage
  - Regional anesthesia
- Identify relevant US anatomy for each particular procedure.
- Recognize the relevant findings and pitfalls when performing CUS for procedural guidance.
- Integrate CUS for procedural guidance into individual patient and departmental management.

Bowel
- Describe the indications and limitations of bowel CUS
- Perform CUS protocols for the detection of:
  - Acute appendicitis
  - Small and Large Bowel obstruction
  - Pneumoperitoneum
  - Diverticulitis
  - Hernia
  - Intussusception and Pyloric Stenosis
  - Evaluation/placement of orogastric/nasogastric or percutaneous gastronomy tube
- Identify relevant US anatomy of bowel structures.
- Recognize the relevant findings and pitfalls when evaluating for bowel pathology
- Integrate bowel CUS findings into individual patient and departmental management.

Transesophageal Echocardiography (TEE)
- Describe the indications, limitations, and contraindications to resuscitative TEE.
- Perform standard TEE views to evaluate for cardiac pathology, guidance of chest compressions in cardiopulmonary resuscitation, and procedures, such as pericardiocentesis, pacemaker placement, and ECMO catheter placement.
- Advanced evaluation:
  - Regional wall motion abnormalities
  - Aortic dissection
  - Aortic aneurysm

Appendix 4. Recommendations for an EM Residency CUS Education Program

Successful EUS Residency Education in accordance with these guidelines requires significant departmental and institutional support. The purpose of these additional recommendations is to delineate the scope of resources required to facilitate the development and maintenance of CUS Residency Education programs. Application of these recommendations is dependent on EM residency size, current and planned CUS utilization, and institutional capabilities.

CUS Faculty:

1. CUS Director: At least one full time EM attending faculty with sufficient CUS program coordination expertise. Sufficient non-clinical time for planning and conducting all CUS program activities is essential to ensuring adequate resident training.
2. CUS Faculty: At least one additional full time EM attending faculty member committed to actively developing CUS expertise. Sufficient non-clinical time for conducting CUS program activities is essential to ensuring adequate resident training. The number of dedicated CUS faculty needed is dependent on the size of the residency and quality of the training program desired.
3. Credentialed CUS Faculty: To adequately supervise and educate residents in CUS, a minimum of fifty percent of Core Faculty members at all EM residency programs need to be credentialed in CUS. For example, if a program has 12 core faculty, then 6 need to be credentialed in CUS. May be inclusive of the CUS Director and Faculty.

Equipment and Materials:

1. CUS systems with appropriate transducers and imaging capabilities readily available for immediate resident clinical use 24/7.
2. CUS educational (online and/or print) resources readily available for access.
3. Recent and landmark CUS literature as well as opportunities to participate in local quality improvement and research projects need to be provided to residents and core US faculty.

Curriculum Components and Competency Assessment:

1. Initial CUS Training: Didactic and hands-on instruction in CUS physics, machine use, and introduction to core CUS applications need to be provided early in residency as a half or full day course.
2. Annual CUS Rotations: Two-week rotation in the first year to learn basic EUS knowledge and skills, followed by at least one week in each subsequent year to reinforce learning and acquire more advanced skills. One rotation without continued learning within the EM residency curriculum is inadequate. For each trainee, a minimum of 80 hours of dedicated EUS rotation time is recommended during an EM residency.
3. Suggested rotation educational methods and assessment measures:
    a. Orientation: Begin rotation with a baseline CUS skills assessment to identify trainee's unique learning needs. Follow with hands-on small group instruction in the ED focusing on machine operation, exam protocols, image optimization and interpretation, documentation, as well as integration of CUS findings into daily clinical practice.
    b. Scheduled supervised scanning shifts with CUS faculty in the ED to provide opportunities for both proctored and semi-independent image acquisition and interpretation. All training exams are submitted for timely quality assurance review.
    c. Weekly Academic Day:
        i. Quality Assurance/Improvement Review session during which a portion of current trainee's CUS exams are discussed, focusing on challenging cases, pathology, and integration into daily patient and ED management.
        ii. Simulation cases and review of image libraries for additional exposure to less common pathology.

iii. Journal club including a discussion of a recent or landmark CUS literature, an online narrated didactic or live lecture, or chapter review.
iv. Hands-on small group instruction in the ED focusing on current trainees learning needs identified during QA/QI Review or scanning shifts.

d. End the rotation with a final assessment of CUS knowledge utilizing a standardized exam such as the ACEP US Online Exams, as well as an additional CUS skill assessment.
e. Provide a timely end of CUS rotation assessment of knowledge and skills to each resident. Additionally, provide trainees with continued opportunities to evaluate the CUS program itself.

4. Achieving CUS exam requirements: Completion of set number examinations documents adequate experience to develop proficiency. Additional assessment measures described in these guidelines are needed to ensure CUS competency such as participation in QA/QI sessions, SDOTs, OSCEs, and simulation assessments. CUS directors can certify CUS training at the end of residency.
5. Ongoing Quality Assurance System: Digital archiving system for CUS exam images and interpretations for timely quality assurance review and trainee feedback on individual exams which includes technique and image interpretation.
   a. All trainee exams need to be reviewed by CUS faculty until minimum benchmarks are achieved. After this, a proportion of trainee exams need to be reviewed on an ongoing basis throughout residency.
   b. Timely exam feedback must be provided to trainees during and between CUS rotations. Trainees need ready access to individual exam feedback and total exams completed by application and overall.
6. Integrated CUS training in the residency curriculum: Learning needs to be reinforced during quarterly or biannual EUS workshops comprised of CUS didactics and hands-on instruction. An additional 20 hours of dedicated CUS learning between rotations is recommended during a 3 or 4 year residency.

Appendix 5. Recommendations for a CUS Course

Successful training courses in CUS require significant advance planning and resource commitment. The curriculum designed by the course director should include a trainee needs assessment, educational learning objectives, educational methods, and assessment measures. The learning objectives for any CUS Course or rotation are listed in Appendix 3. Important considerations are discussed below

1. Faculty: The course director must be a physician and known expert in clinical ultrasound. The course director should recruit other clinicians already credentialed in CUS to assist with knowledge learning, skills training, and trainee assessment. Several faculty planning meetings are recommended during curriculum development as well as a meeting immediately prior to the course to provide all faculty with an understanding of the setup, curriculum, and logistics.

2. Site and Set Up: The ideal course site includes a large didactic room as well as separate rooms or areas for scanning stations. Private areas for endovaginal US are required if this topic will be covered during training.
    a. Ultrasound Stations: Appropriate machines and transducers are necessary. The learner to instructor ratio should be no higher than 5 to 1 to ensure appropriate skills training.
    b. Ultrasound Models: Image acquisition protocols may be learned on normal live models. Image interpretation requires the incorporation of patients with known pathologic findings, simulators, or incorporation of image libraries.
        i. Pathology models may include otherwise healthy paid or volunteer persons with pericardial effusions, cholelithiasis, aortic aneurysms and chronic ambulatory peritoneal dialysis patients.
        ii. Full informed consent should be obtained from all models and a signed waiver of responsibility is recommended. If an undiagnosed finding is discovered in a model, then the course director must appropriately notify the model and ensure appropriate follow up.

3. Knowledge Learning:
    a. An introductory course for trainees must include instruction in basic US physics, machine operation, and a small number of initial CUS applications to be clinically utilized. Suggested initial applications include Trauma Ultrasound, Central and Peripheral Venous Access, and Abdominal Aortic Aneurysm ultrasound. However, the initial applications will vary by local site as determined by a pre-course needs assessment completed by the course director and local trainee leadership.
        i. A half-day introductory course is appropriate for a single application. Longer courses are required for additional applications. Shorter, repeated courses, supplemented by routine, quality assured, CUS performance during clinical work, are more likely to improve learning and utilization.
    b. Pre- and post-course educational materials must be provided to reinforce course learning. Suggested sources of information include course director approved online narrated lectures, podcasts, websites, traditional textbooks, didactic syllabi, and journal articles.
        i. Utilization of the flipped classroom provides the opportunity for more focused didactics reviewing key concepts and answering trainee questions at the course. Focused didactics provide the opportunity for increased skill training.
        ii. Frequent rotations between didactics and skills training sessions improve trainee and faculty engagement.

4. Skills Training:
    The technical laboratory is an integral component of any ultrasound course.

a. Based on the needs assessment, appropriate and specific learning objectives need to be defined for each station.
   i. Trainees should be deliberately assigned to small groups not necessarily including immediate peers to create more focused learning teams.
   ii. For trainees with prior CUS experience, an initial skills assessment with an SDOT or simulator will help to ensure that trainee specific instruction is provided.
   iii. Instructors should work to maximize the time that the transducer is the trainee's' hands, avoid over teaching of advanced concepts beyond the trainees needs, encourage questions, and consistently engage each trainee.

Appendix 6. CUS Training for Medical Students

CUS Training during a one-month EM Rotation:
General EM clerkships should include an introduction to CUS that may entail a single dedicated clinical US shift with direct faculty supervision, a one-day CUS course, or simply case-by-case incorporation of CUS into patient care in the ED. Students should strive to become familiar with a single CUS application such as the FAST exam, and should be exposed to additional CUS exams over the course of the clerkship. CUS literature, selected textbook chapters, online modules or digital resources should be made available for student review.

Dedicated CUS rotation recommendations:
1. Emergency US and CUS rotations should begin with instruction in Physics/Instrumentation, followed by select applications such as FAST, Aorta, Renal, Hepatobiliary Cardiac, Procedures, Pelvic (including endovaginal US), Deep Venous Thrombosis, Skin and Soft Tissue, and Musculoskeletal.
2. Didactic education should be delivered in electronic, preferably online, format in an attempt to maximize hands-on education in the clinical area. A reliable resource that course directors may choose to utilize for US didactic material is the ACEP Sonoguide website. available on the ACEP Web site (www.acep.org/sonoguide).
3. Assessments should include a pre-test including still image/video interpretation and case-based applications of CUS. To assess their progress, the same test may be completed at the end of the rotation.
4. Each student should obtain between 75 to 100 scans over the course of a 4-week rotation, or approximately 40-50 scans over the course of a 2-week rotation. Dedicated shifts may include evenings or weekends to maximize exposure to pathology and interesting emergency US cases. If digital tracking is not available, students should generate a personal log of CUS exams on which to build during their postgraduate education.
5. All student-performed scans should be directly supervised by CUS credentialed faculty or recorded for subsequent quality assurance review with the rotation director or adjunct ultrasound faculty.
6. Students should complete the reading of an assigned CUS text or viewing of an assigned online curriculum over the course of the rotation. In addition, it is recommended that students identify a current publication relevant to CUS to discuss their findings with the rotation director.

Additional Opportunities for CUS Training in Undergraduate Medical Education:
With the advent of more US in various specialties, this preparation in medical school can benefit students with interests outside of emergency medicine.

Emergency and Clinical US directors could consider incorporating US into:
1. Gross anatomy course highlighting common US anatomy (eg, FAST exam during study of the abdomen, heart)
2. Physiology course highlighting doppler, M mode, and basic waveform analysis.
3. Pathology course highlighting common pathologies such as fluid in potential spaces, depressed cardiac function, cellulitis, abscess, retinal detachment or other commonly seen pathologies in the ED.
4. Introduction to Clinical Medicine course highlighting US guided vascular access.
5. Ultrasound in the physical exam. Although US use in clinical practice is a diagnostic test that warrants a generated report, it can be used to teach components of the physical exam. For example, teaching the traditional cardiac auscultation can be augmented with cardiac images of the heart.
6. Ultrasound training before clinical rotations. Some schools have developed short clinical skills time before rotations where US can be implemented to help student learners see how US is used in that particular field.
7. Ultrasound electives in the 4th year can include a longitudinal program where US lectures, hands on, and journal club can be incorporated into a course.

The future of US in medical education is constantly being built, modified and ever evolving. Though it seems like there are early adopters trying to implement CUS in medical education. one of the key components is finding an US champion to spearhead CUS into the undergraduate medical education framework. From there, getting students involved through an US interest group can improve the impact through direct feedback and student motivation. The two methods of a top-down administrative implementation of US in medical education are the best method, yet warrants buy in from the dean and the curriculum committee. A bottom up approach through student interest, electives and extracurricular exposure takes longer but can still impact student competence in US.

ACEP Emergency Ultrasound Section Writing Committee and Contributors:

Editors: Arun Nagdev MD; Penelope C. Lema, MD, FACEP; Javier E. Rosario MD, FACEP; Elaine Situ-LaCasse, MD; and Michael Gottlieb, MD, FACEP

Introduction: Arun Nagdev MD; Penelope C. Lema, MD, FACEP; Michael Gottlieb, MD, FACEP

Scope of Practice: Vivek S. Tayal, MD, FACEP; Christopher C. Raio, MD, FACEP

Training: John M. Bailitz, MD, FACEP; Stephen J. Leech, MD, FACEP; Romolo J. Gaspari, MD, PhD, FACEP

Credentialing: Robert A. Jones, DO, FACEP; Thompson Kehrl, MD, FACEP; Romolo J. Gaspari MD, PhD, FACEP

Quality Assurance: J. Matthew Fields, MD, FACEP

Value and Reimbursement: Romolo J. Gaspari, MD, PhD, FACEP and Michael Gottlieb, MD, FACEP

Institutional Leadership: Resa Lewiss MD; Gerardo C. Chiricolo, MD, FACEP

Future issues: Srikar R. Adhikari MD, MS, FACEP

Core and Advanced Applications: Lindsay A. Taylor MD, FACEP; Megan Leo, MD; Judy C. Lin MD, FACEP; Sara Damewood, MD, FACEP; Frances Russell, MD, FACEP; Dan Mantuani MD; Di Coneybeare, MD, MHPE; Amy Marks MD; Josie G. Acuña MD; Stephen Alerhand, MD; Petra Duran-Gehring, MD, FACEP; Margaret Lin-Martore, MD; Lori A. Stolz, MD, FACEP; Rachel B. Liu MD, FACEP; Felipe Teran, MD, FACEP; Laura Oh MD, FACEP; Michael Gottlieb MD, FACEP.

References

1. Chiu L, Jairam MP, Chow R, et al. Meta-analysis of point-of-care lung ultrasonography versus chest radiography in adults with symptoms of acute decompensated heart failure. *Am J Cardiol*. 2022;174:89-95.
2. Fields JM, Davis J, Alsup C, et al. Accuracy of point-of-care ultrasonography for diagnosing acute appendicitis: A systematic review and meta-analysis. *Acad Emerg Med*. 2017;24(9):1124-36.
3. Gottlieb M, Patel D, Marks A, Peksa GD. Ultrasound for the diagnosis of shoulder dislocation and reduction: A systematic review and meta-analysis. *Acad Emerg Med*. 2022;29(8):999-1007.
4. Tran QK, Fairchild M, Yardi I, Mirda D, Markin K, Pourmand A. Efficacy of ultrasound-guided peripheral intravenous cannulation versus standard of care: A systematic review and meta-analysis. *Ultrasound Med Biol.* 2021;47(11):3068-78.
5. Gu WJ, Wu XD, Wang F, Ma ZL, Gu XP. Ultrasound guidance facilitates radial artery catheterization: A meta-analysis with trial sequential analysis of randomized controlled trials. *Chest*. 2016;149(1):166-79.
6. Gottlieb M, Holladay D, Peksa GD. Ultrasound-assisted lumbar punctures: A systematic review and meta-Analysis. *Acad Emerg Med*. 2019;26(1):85-96.

7. Heller MB, Mandavia D, Tayal VS, et al. Residency training in emergency ultrasound: fulfilling the mandate. *Acad Emerg Med*. 2002;9:835-9.
8. ACR-SPR-SRU Practice Parameter for Performing and Interpreting Diagnostic Ultrasound Examinations. 2017. Accessed December 2022 at https://www.acr.org/-/media/ACR/Files/Practice-Parameters/us-perf-interpret.pdf
9. ACEP Emergency Ultrasound Section. Emergency Ultrasound Coding and Reimbursement Document. 2021. Accessed December 2022 at https://www.acep.org/emultrasound/subcommittees/coding-reimbursement/
10. Geria RN, Raio CC, Tayal V. Point-of-care ultrasound: not a stethoscope-a separate clinical entity. *J Ultrasound Med*. 2015;34:172-3.
11. American College of Emergency Physicians. Definition of Clinical Ultrasonography [policy statement]. Reaffirmed June 2022. Accessed December 2022 at https://www.acep.org/patient-care/policy-statements/definition-of-clinical-ultrasonography
12. American College of Emergency Physicians. Emergency Ultrasound Imaging Criteria Compendium [policy statement]. Approved October 2021. Accessed December 2022 at https://www.acep.org/patient-care/policy-statements/Emergency-Ultrasound-Imaging-Criteria-Compendium/
13. Shah VP, Tunik MG, Tsung JW. Prospective evaluation of point-of-care ultrasonography for the diagnosis of pneumonia in children and young adults. *JAMA Pediatr.* 2013;167:119-25.
14. Gallagher RA, Levy J, Vieira RL, et al. Ultrasound assistance for central venous catheter placement in a pediatric emergency department improves placement success rates. *Acad Emerg Med.* 2014;21:981-6.
15. Elikashvili I, Tay ET, Tsung JW. The effect of point-of-care ultrasonography on emergency department length of stay and computed tomography utilization in children with suspected appendicitis. *Acad Emerg Med*. 2014;21:163-70.
16. Bartocci M, Fabrizi G, Valente I, et al. Intussusception in childhood: role of sonography on diagnosis and treatment. *J Ultrasound.* 2015;18:205-11.
17. Plumb J, Mallin M, Bolte RG. The role of ultrasound in the emergency department evaluation of the acutely painful pediatric hip. *Pediatr Emerg Care*. 2015;31:54-8; quiz 9-61.
18. Deanehan J, Gallagher R, Vieira R, et al. Bedside hip ultrasonography in the pediatric emergency department: a tool to guide management in patients presenting with limp. *Pediatr Emerg Care*. 2014;30:285-7.
19. Marin JR, Lewiss RE, AAP, et al. Point-of-care ultrasonography by pediatric emergency medicine physicians. *Pediatrics*. 2015;135(4):e1113-22.
20. Vieira RL, Hsu D, Nagler J, et al. Pediatric emergency medicine fellow training in ultrasound: consensus educational guidelines. *Acad Emerg Med*. 2013;20:300-6.
21. Zieleskiewicz L, Muller L, Lakhal K, et al. Point-of-care ultrasound in intensive care units: assessment of 1073 procedures in a multicentric, prospective, observational study. *Intensive Care Med*. 2015;41:1638-47.
22. Gallard E, Redonnet JP, Bourcier JE, et al. Diagnostic performance of cardiopulmonary ultrasound performed by the emergency physician in the management of acute dyspnea. *Am J Emerg Med*. 2015;33:352-8.
23. Nelson BP, Sanghvi A. Out of hospital point of care ultrasound: current use models and future directions. *Eur J Trauma Emerg Surg*. 2016;42:139-50.
24. Press GM, Miller SK, Hassan IA, et al. Evaluation of a training curriculum for prehospital trauma ultrasound. *J Emerg Med.* 2013;45:856-64.

25. Taylor J, McLaughlin K, McRae A, et al. Use of prehospital ultrasound in North America: a survey of emergency medical services medical directors. *BMC Emerg Med*. 2014;14:6.
26. Shorter M, Macias DJ. Portable handheld ultrasound in austere environments: use in the Haiti disaster. *Prehosp Disaster Med.* 2012;27:172-7.
27. Zhou J, Huang J, Wu H, et al. Screening ultrasonography of 2,204 patients with blunt abdominal trauma in the Wenchuan earthquake. *J Trauma Acute Care Surg*. 2012;73:890-4.
28. Zhang S, Zhu D, Wan Z, et al. Utility of point-of-care ultrasound in acute management triage of earthquake injury. *Am J Emerg Med*. 2014;32:92-5.
29. Raja AS, Propper BW, Vandenberg SL, et al. Imaging utilization during explosive multiple casualty incidents. *J Trauma*. 2010;68:1421-4.
30. Shah S, Dalal A, Smith RM, et al. Impact of portable ultrasound in trauma care after the Haitian earthquake of 2010. *Am J Emerg Med*. 2010;28:970-1.
31. Kirkpatrick AW, Campbell MR, Novinkov OL, et al. Blunt trauma and operative care in microgravity: a review of microgravity physiology and surgical investigations with implications for critical care and operative treatment in space. *J Am Coll Surg.* 1997;184:441-53.
32. Campbell MR, Billica RD, Johnston SL, et al. Performance of advanced trauma life support procedures in microgravity. *Aviat Space Environ Med*. 2002;73:907-12.
33. Russell TC, Crawford PF. Ultrasound in the austere environment: a review of the history, indications, and specifications. *Mil Med*. 2013;178:21-8.
34. Rozanski TA, Edmondson JM, Jones SB. Ultrasonography in a forward-deployed military hospital. *Mil Med*. 2005;170:99-102.
35. Morgan AR, Vasios WN, Hubler DA, et al. Special operator level clinical ultrasound: an experience in application and training. *J Spec Oper Med.* 2010;10:16-21.
36. Strode CA, Rubal BJ, Gerhardt RT, et al. Satellite and mobile wireless transmission of focused assessment with sonography in trauma. *Acad Emerg Med*. 2003;10:1411-4.
37. Bahner DP, Goldman E, Way D, Royall NA, Liu YT. The state of ultrasound education in U.S. medical schools: results of a national survey. *Acad Med*. 2014;89:1681-6.
38. Soni NJ, Schnobrich D, Matthews BK, Tierny DM, Jensen TP, Dancel R, et al. Point-of-Care Ultrasound for Hospitalists: A Position Statement of the Society of Hospital Medicine. *J Hosp Med*. 2019;14:E1–E6.
39. Beal EW, Sigmond BR, Sage-Silski L, Lahey S, Nguyen V, Bahner DP. Point-of-care ultrasound in general surgery residency training: A proposal for milestones in graduate medical education ultrasound. *J Ultrasound Med*. 2017;36:2577-84.
40. Young AC, Butts C, deBoisblanc BP, Tejedor RS, Kantrow SP, Lammi MR. Implementation of a longitudinal critical care fellowship ultrasound curriculum. *ATS Scholar.* 2022;3:125-34.
41. Smalley CM, Fertel BS, Broderick E. Standardizing point-of-care ultrasound credentialing across a large health care system. *Jt Comm J Qual Patient Saf*. 2020;46:471-6.
42. Bahner DP, Hughes D, Royall NA. I-AIM: a novel model for teaching and performing focused sonography. J Ultrasound Med. 2012;31:295-300.
43. Damewood SC, Leo M, Bailitz J, Gottlieb M, Liu R, Hoffmann B, et al. Tools for measuring clinical ultrasound competency: recommendations from the Ultrasound Competency Work Group. *AEM Educ Train*. 2020;4:S106-S112.
44. Panebianco NL, Liu RB, Alerhand S, Au AK, Bailitz J, Chiem AT, et al. Joint recommendations and resources for clinical ultrasound education amidst the COVID-19 era. *AEM Educ Train*. 2020;4:438-42.
45. Smalley CM, Browne V, Kaplan B, Russ B, Wilson J, Lewiss RE. Early innovative immersion: a course for pre-medical professions students using point-of-care ultrasound. *J Ultrasound Med*. 2016;35:2681-6.

46. Smalley CM, Sande M, Wilson J, Lewiss RE. An education innovation to improve point-of-care ultrasound skills in senior emergency medicine residents: a mandatory advanced rotation. *J Medic Educ Training*. 2017;1:001.
47. American College of Emergency Physicians. Sonoguide. Accessed December 2022: https://www.acep.org/sonoguide/
48. Society for Academic Emergency Medicine Academy for Emergency Ultrasound Asynchronous Ultrasound Curriculum. In: Default [Internet]. Accessed December 2022. Available: https://www.saem.org/about-saem/academies-interest-groups-affiliates2/aeus/education/aeus-off-the-shelf-asynchronous-ultrasound-curriculum
49. Miller GT, Scerbo MW, Zybak S, Byars DV, Goodmurphy CW, Lattanzio FA, et al. Learner improvement from a simulation-enhanced ultrasonography curriculum for first-year medical students. *J Ultrasound Med*. 2017;36:609-19.
50. Damewood SC, Lewiss RE, Huang JV. Ultrasound simulation utilization among point of care ultrasound users: Results of a survey. *J Clin Ultrasound*. 2018;46:571-4.
51. Smith S, Lobo V, Anderson KL, Gisondi MA, Sebok-Syer SS, Duanmu Y. A randomized control trial of simulation-based mastery learning to teach the extended focused assessment with sonography in trauma. *AEM Educ Train*. 2021. doi:10.1002/aet2.10606
52. Harel-Sterling M, McLean LJ. Development of a blended learning curriculum to improve POCUS education in a pediatric emergency medicine training program. *CJEM*. 2022;24:325-8.
53. Stolz LA, Amini R, Situ-LaCasse E, Acuña J, Irving SC, Friedman L, et al. Multimodular ultrasound orientation: residents' confidence and skill in performing point-of-care ultrasound. *Cureus*. 2018;10:e3597.
54. Lewiss RE, Hayden GE, Murray A, Liu YT, Panebianco N, Liteplo AS. SonoGames: an innovative approach to emergency medicine resident ultrasound education. *J Ultrasound Med*. 2014;33:1843-9.
55. Liteplo AS, Carmody K, Fields MJ, Liu RB, Lewiss RE. SonoGames: Effect of an innovative competitive game on the education, perception, and use of point-of-care ultrasound. *J Ultrasound Med*. 2018;37:2491-6.
56. PoSaw LL, Wubben BM, Bertucci N, Bell GA, Healy H, Lee S. Teaching emergency ultrasound to emergency medicine residents: a scoping review of structured training methods. *J Am Coll Emerg Physicians Open*. 2021;2:e12439.
57. Duanmu Y, Henwood PC, Takhar SS, Chan W, Rempell JS, Liteplo AS, et al. Correlation of OSCE performance and point-of-care ultrasound scan numbers among a cohort of emergency medicine residents. *Ultrasound J*. 2019;11(1):3.
58. Anders Ericsson K. Deliberate practice and acquisition of expert performance: A general overview. *Acad Emerg Med*. 2008;15:988-94.
59. Saxena M, Tan TX, Duanmu Y, Ashenburg N, Ghaziaskar Z. Seeing (virtually) is believing: The utility of teleultrasound education for the focused assessment with sonography for trauma exam. *Acad Emerg Med*. 2021;S403-S403.
60. Young K, Moon N, Wilkinson T. Building point-of-care ultrasound capacity in rural emergency departments: An educational innovation. *Can J Rural Med*. 2021;26:169-175.
61. Narang A, Bae R, Hong H, Thomas Y, Surette S, Cadieu C, et al. Utility of a deep-learning algorithm to guide novices to acquire echocardiograms for limited diagnostic use. *JAMA Cardiol*. 2021;6:624-32.
62. Adhikari S, Amini R, Stolz L, O'Brien K, Gross A, Jones T, et al. Implementation of a novel point-of-care ultrasound billing and reimbursement program: fiscal impact. *Am J Emerg Med*. 2014;32:592-5.
63. Beeson MS, Carter WA, Christopher TA, Heidt JW, Jones JH, Meyer LE, et al. The development of the emergency medicine milestones. *Acad Emerg Med*. 2013;20:724-9.
64. Lewiss RE, Pearl M, Nomura JT, Baty G, Bengiamin R, Duprey K, et al. CORD-AEUS: consensus document for the emergency ultrasound milestone project. *Acad Emerg Med*. 2013;20:740-5.

65. Cooney RR, Murano T, Ring H, Starr R, Beeson MS, Edgar L. The Emergency Medicine Milestones 2.0: Setting the stage for 2025 and beyond. *AEM Educ Train*. 2021;5:e10640.
66. Russell FM, Kennedy SK, Rood LK, Nti B, Herbert A, Rutz MA, et al. Design and implementation of a basic and global point of care ultrasound (POCUS) certification curriculum for emergency medicine faculty. *Ultrasound J*. 2022;14:10.
67. Budhram G, Elia T, Rathlev N. Implementation of a successful incentive-based ultrasound credentialing program for emergency physicians. *West J Emerg Med*. 2013;14:602-8.
68. American College of Emergency Physicians. Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department [policy statement]. Approved March 2022.
69. Strony R, Marin JR, Bailitz J, Dean AJ, Blaivas M, Tayal V, et al. Systemwide clinical ultrasound program development: An expert consensus model. *West J Emerg Med*. 2018;19:649-53.
70. Accrediting Advanced Emergency Ultrasound Fellowships. In: Emergency Ultrasound Fellowship Accreditation Council – [Internet]. [cited 29 Apr 2022]. Available: https://eufacouncil.org/
71. Advanced EM Ultrasonography. In: American Board of Emergency Medicine [Internet]. [cited 29 Apr 2022]. Available: https://www.abem.org/public/become-certified/focused-practice-designation/advanced-em-ultrasonography
72. Gottlieb M, Duran-Gehring P, Coneybeare D, Lema P. Creation of a novel course for the advanced emergency medicine ultrasound focused practice designation examination. *AEM Educ Train*. 2022;6(5):e10810.
73. Davis JJ, Wessner CE, Potts J, Au AK, Pohl CA, Fields JM. Ultrasonography in Undergraduate Medical Education: A Systematic Review. *J Ultrasound Med*. 2018;37:2667-79.
74. American Medical Association. H-230.960 Privileging for Ultrasound Imaging. Accessed December, 7, 2022, at https://policysearch.ama-assn.org/policyfinder/detail/privileging%20for%20ultrasound%20imaging?uri=%2FAMADoc%2FHOD.xml-0-1591.xml
75. American College of Emergency Physicians. Emergency Ultrasound Certification by External Entities [policy statement]. Reaffirmed February 2020. Accessed December 2022 at https://www.acep.org/patient-care/policy-statements/emergency-ultrasound-certification-by-external-entities
76. OPPE and FPPE: Tools to help make privileging decisions. The Joint Commission, 2020. Accessed December 2022, at https://www.jointcommission.org/standards/standard-faqs/hospital-and-hospital-clinics/medical-staff-ms/000002291/
77. American College of Emergency Physicians. ACEP Emergency Ultrasound Standard Reporting Guidelines [Internet]. 2018 [cited 2022 Apr 28]. Available from: https://www.acep.org/globalassets/uploads/uploaded-files/acep/clinical-and-practice-management/policy-statements/information-papers/emergency-ultrasound-standard-reporting-guidelines---2018.pdf
78. Byrne M, Geria R, Kummer T, Leech S, Lewiss R, Noble V, et al. Emergency ultrasound: workflow white paper. ACEP [accessed 24 July 2018] [Internet]. Available from: https://www.acep.org/globalassets/uploads/uploaded-files/acep/membership/sections-of-membership/ultra/workflow-white-paper.pdf
79. ACEP. Ultrasound Services in the Emergency Department. [policy statement]. Approved June 2022. Available from: https://www.acep.org/patient-care/policy-statements/ultrasound-services-in-the-emergency-department/
80. Byrne M, ACEP Emergency Ultrasound Section. Essential Machine Features [Internet]. 2014 [cited 2022 Apr 28]. Available from: https://www.acep.org/globalassets/uploads/uploaded-files/acep/membership/sections-of-membership/ultra/essential-machine-features-2014.pdf
81. American College of Emergency Physicians. Appropriate Use Criteria for Handheld/Pocket Ultrasound Devices [Internet]. 2018 [cited 2022 Apr 28]. Available from: https://www.acep.org/globalassets/new-pdfs/policy-statements/appropriate-use-criteria-for-handheld-

pocket-ultrasound-devices.pdf
82. Stolz L, O'Brien KM, Miller ML, Winters-Brown ND, Blaivas M, Adhikari S. A review of lawsuits related to point-of-care emergency ultrasound applications. *West J Emerg Med*. 2015;16(1):1-4.
83. Labovitz AJ, Noble VE, Bierig M, et al. Focused cardiac ultrasound in the emergent setting: a consensus statement of the American Society of Echocardiography and American College of Emergency Physicians. *J Am Soc Echocardiogr*. 2010;23:1225-30.
84. Gaspari R, Dickman E. Effect of performing but not billing for emergency ultrasound in the emergency department. *Ann Emerg Med*. 2005. 46(3s).S21.
85. Sierzenski PR, Fletcher S, O'Connor RE. 276: Emergency physicians who use ultrasound demonstrate higher performance parameters compared to colleagues who are rare users, independent of the clinical hours or shift type worked. *Ann Emerg Med*. 2007;50(3): Supplement S87.
86. Dean AJ, Zwank M, Strony R, Marin J. System Wide Clinical Ultrasound Resources. ACEP. https://www.acep.org/emultrasound/subcommittees/system-wide-ultrasound-directors/
87. Philips Lumify. Accessed May 5, 2022, at https://www.usa.philips.com/healthcare/sites/lumify
88. EchoNous. Accessed May 5, 2022, at https://echonous.com/en_us/
89. GE Vscan Air. Accessed May 5, 2022, at https://www.gehealthcare.com/products/ultrasound/handheld-ultrasound-vscan
90. Butterfly iQ+. Accessed May 5, 2022, at https://www.butterflynetwork.com/
91. EXO works. Accessed May 5, 2022, at https://www.exo.inc/
92. Hsieh A, Baker MB, Phalen JM, et al. Handheld point-of-care ultrasound: safety considerations for creating guidelines. *J Intensive Care Med*. 2022;37(9):1146-51.
93. McGahan J, Pozniak, M, Cronan J, Pellerito J, Lee K, Blaivas, M. Handheld ultrasound: Threat or opportunity? *Appl Radiol*. March 09, 2015.
94. ECRI. Top 10 health technology hazards for 2020: ECRI Institute. Accessed May 5, 2022, at https://www.ecri.org/landing-2020-top-ten-health-technology-hazards
95. Marsh-Feiley G, Eadie L, Wilson P. Telesonography in emergency medicine: A systematic review. *PLoS One*. 2018;13(5):e0194840.
96. Clinical Ultrasound Accreditation Program. http://www.cuap.org
97. Rubano, E, Mehta N, Caputo W, Paladino L, Sinert R. Systematic review: emergency department bedside ultrasonography for diagnosing suspected abdominal aortic aneurysm *Acad Emerg Med*. 2013;20:128-38.
98. Mai T, Woo M, Boles K, Jetty P. Point of care ultrasound performed by a medical student compared to physical examination by vascular surgeons in the detection of abdominal aortic aneurysms. *Ann Vasc Surg*. 2018;52:15-21.
99. Guirguis-Blake JM, Beil TL, Senger CA, Coppola EL. Primary care screening for abdominal aortic aneurysm: a systematic evidence review for the U.S. Preventive Services Task Force. Agency for Healthcare Research and Quality (US), Rockville (MD); 2019.
100. Hoffmann B, Um P, Bessman ES, Ding R, Kelen GD, McCarthy ML. Routine screening for asymptomatic abdominal aortic aneurysm in high-risk patients is not recommended in emergency departments that are frequently crowded. *Acad Emerg Med*. 2009;16:1242-50.
101. Wang Y, Yu H, Cao Y, Wan Z. Early screening for aortic dissection with point-of-care ultrasound by emergency physicians. *J Ultrasound Med*. 2020;39:1309-15.
102. Catalano O, Siani A. Ruptured abdominal aortic aneurysm. *J Ultrasound Med*. 2005;24:1077-83.
103. Nazerian P, Mueller C, Vanni S, et al. Integration of transthoracic focused cardiac ultrasound in the diagnostic algorithm for suspected acute aortic syndromes. *Eur Heart J*. 2019;40(24):1952-60.
104. Sobczyk D, Nycz K. Feasibility and accuracy of bedside transthoracic echocardiography in diagnosis of acute proximal aortic dissection. *Cardiovasc Ultrasound*. 2015;13:15.
105. Erbel R, Aboyans V, Boileau C, et al. 2014 ESC Guidelines on the diagnosis and treatment of aortic diseases: Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult. The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European

Society of Cardiology (ESC) [published correction appears in *Eur Heart J*. 2015;1;36(41):2779.
106. Howell JM, Eddy OL, Lukens TW, et al. Clinical policy: Critical issues in the evaluation and management of emergency department patients with suspected appendicitis. *Ann Emerg Med*. 2010;55(1):71-116.
107. Elikashvili I, Tay ET, Tsung JW. The effect of point-of-care ultrasonography on emergency department length of stay and computed tomography utilization in children with suspected appendicitis. *Acad Emerg Med*. 2014;21(2):163-70.
108. Gottlieb M, Peksa GD, Pandurangadu AV, Nakitende D, Takhar S, Seethala RR. Utilization of ultrasound for the evaluation of small bowel obstruction: A systematic review and meta-analysis. *Am J Emerg Med*. 2018;36(2):234-42.
109. Boniface KS, King JB, LeSaux MA, Haciski SC, Shokoohi H. Diagnostic accuracy and time-saving effects of point-of-care ultrasonography in patients with small bowel obstruction: A prospective study. *Ann Emerg Med*. 2020;75(2):246-56.
110. Laméris W, van Randen A, Bipat S, Bossuyt PM, Boermeester MA, Stoker J. Graded compression ultrasonography and computed tomography in acute colonic diverticulitis: meta-analysis of test accuracy. *Eur Radiol.* 2008;18(11):2498-511.
111. Cohen A, Li T, Stankard B, Nelson M. A prospective evaluation of point-of-care ultrasonographic diagnosis of diverticulitis in the emergency department. *Ann Emerg Med*. 2020 Dec;76(6):757-766.
112. Nazerian P, Gigli C, Donnarumma E, et al. Diagnostic accuracy of point-of-care ultrasound integrated into clinical examination for acute diverticulitis: A prospective multicenter study. *Ultraschall Med*. 2021;42(6):614-22.
113. Yum J, Hoffman T, Naraghi L. Timely diagnosis of pneumoperitoneum by point-of-care ultrasound in the emergency department: A case series. *Clin Pract Cases Emerg Med*. 2021;5(4):377-80.
114. Jiang L, Wu J, Feng X. The value of ultrasound in diagnosis of pneumoperitoneum in emergent or critical conditions: A meta-analysis. *Hong Kong J Emerg Med*. 2019;26(2):111-7.
115. Robinson A, Light D, Nice C. Meta-analysis of sonography in the diagnosis of inguinal hernias. *J Ultrasound Med.* 2013;32(2):339-46.
116. Siadecki SD, Frasure SE, Saul T, Lewiss RE. Diagnosis and reduction of a hernia by bedside ultrasound: a case report. *J Emerg Med*. 2014;47(2):169-71.
117. Bergmann KR, Arroyo AC, Tessaro MO, et al. Diagnostic accuracy of point-of-care ultrasound for intussusception: A multicenter, noninferiority study of paired diagnostic tests. *Ann Emerg Med*. 2021;78(5):606-15.
118. Lin-Martore M, Kornblith AE, Kohn MA, Gottlieb M. Diagnostic accuracy of point-of-care ultrasound for intussusception in children presenting to the emergency department: A systematic review and meta-analysis. *West J Emerg Med*. 2020;21(4):1008-16.
119. Kim JH, Lee JY, Kwon JH, Cho HR, Lee JS, Ryu JM. Point-of-care ultrasound could streamline the emergency department workflow of clinically nonspecific intussusception. *Pediatr Emerg Care*. 2020;36(2):e90-e95.
120. Sivitz AB, Tejani C, Cohen SG. Evaluation of hypertrophic pyloric stenosis by pediatric emergency physician sonography. *Acad Emerg Med*. 2013;20(7):646-51.
121. Park JS, Byun YH, Choi SJ, Lee JS, Ryu JM, Lee JY. Feasibility of point-of-care ultrasound for diagnosing hypertrophic pyloric stenosis in the emergency department. *Pediatr Emerg Care*. 2021;37(11):550-4.
122. Gottlieb M, Alerhand S. Managing cardiac arrest using ultrasound [published online ahead of print, 2022 Nov 2]. *Ann Emerg Med*. 2022;S0196-0644(22)01120-9.
123. Mandavia D, Hoffner R, Mahaney K, et al. Bedside echocardiography by emergency physicians. *Ann Emerg Med.* 2001;38:377-82.
124. Plummer D, Brunnette D, Asinger R,et al. Emergency department echocardiography improves outcome in penetrating cardiac injury. *Ann Emerg Med*. 1992;21:709-12.

125. Inaba K, Chouliaras K, Zakaluzny, S, et al. FAST Ultrasound Examination as a Predictor of Outcomes After Resuscitative Thoracotomy. *Ann Surg.* 2015;262(3):512-8.
126. Blaivas M, Fox J. Outcome in cardiac arrest patients found to have cardiac standstill on the bedside emergency department echocardiogram. *Acad Emerg Med.* 2001;8:616-21.
127. Gaspari R, Weekes A, Adhikari S, et al. Emergency department point-of-care ultrasound in out-of-hospital and in-ED cardiac arrest. *Resuscitation.* 2016;109:33-39.
128. Moore CL, Rose GA, Tayal VS, et al. Determination of left ventricular function by emergency physician echocardiography of hypotensive patients. *Acad Emerg Med.* 2002;9(3):186-93.
129. Jones AE, Tayal VS, Sullivan DM, et al. Randomized, controlled trial of immediate versus delayed goal-directed ultrasound to identify the cause of nontraumatic hypotension in emergency department patients. *Crit Care Med*. 2004;32:1703-8.
130. Kanji HD, McCallum J, Sirounis D, et al. Limited echocardiography-guided therapy in subacute shock is associated with change in management and improved outcomes. *J Crit Care.* 2014;29:700-5.
131. Nagdev AD, Merchant RC, Tirado-Gonzalez A, et al. Emergency department bedside ultrasonographic measurement of the caval index for noninvasive determination of low central venous pressure. *Ann Emerg Med.* 2010;55:290-5.
132. Perera P, Mailhot T, Riley D, et al. The RUSH exam: Rapid Ultrasound in SHock in the evaluation of the critically ill. *Emerg Med Clin North Am.* 2010;28(1):29-56.
133. Russell FM, Ehrman RR, Cosby K, et al. Diagnosing acute heart failure in patients with undifferentiated dyspnea: a lung and cardiac ultrasound (LuCUS) protocol. *Acad Emerg Med*. 2015;22:182-91.
134. Martindale JL, Wakai A, Collins SP, et al. Diagnosing acute heart failure in the emergency department: A systematic review and meta-analysis. *Acad Emerg Med.* 2016;23(3):223-42.
135. Rutz MA, Clary JM, Kline JA, et al. Emergency physicians are able to detect right ventricular dilation with good agreement compared to cardiology. *Acad Emerg Med.* 2017;24(7):867-74.
136. Fields JM, Davis J, Girson L, et al. Transthoracic echocardiography for diagnosing pulmonary embolism: A systematic review and meta-analysis. *JASE*. 2017; 30(7):714-723.e4, 2017 Jul.
137. Weekes AJ, Thacker G, Troha D, et al. Diagnostic accuracy of right ventricular dysfunction markers in normotensive emergency department patients with acute pulmonary embolism. *Ann Emerg Med*. 2016;68(3):277-91.
138. Weekes AJ, Raper JD, Lupez K, et al. Development and validation of a prognostic tool: Pulmonary embolism short-term clinical outcomes risk estimation (PE-SCORE). *PLoS One*. 2021;16(11):e0260036.
139. Pomero F, Dentali F, Borretta V, Bonzini M, Melchio R, Douketis JD, Fenoglioet LM. Accuracy of emergency physician-performed ultrasonography in the diagnosis of deep-vein thrombosis: A systematic review and meta-analysis. *Thromb Haemost.* 2013;109:137-45.
140. Burnside PR, Brown MD, Kline JA. Systematic review of emergency physician-performed ultrasonography for lower-extremity deep vein thrombosis. *Acad Emerg Med.* 2008;15:493-8.
141. Lee JH, Lee SH, Yun SJ. Comparison of 2-point and 3-point point-of-care ultrasound techniques for deep vein thrombosis at the emergency department: A meta-analysis. *Medicine (Baltimore).* 2019;98(22):e15791.
142. Needleman L, Cronan JJ, Lilly MP, Merli GJ, Adhikari S, Hertzberg BS, DeJong MR, Streiff MB, Meissner MH. Ultrasound for lower extremity deep venous thrombosis: multidisciplinary recommendations from the Society of Radiologists in Ultrasound Consensus Conference. *Circulation*. 2018;137(14):1505-15.
143. Varrias D, Palaiodimos L, Balasubramanian P, et al. The use of point-of-care ultrasound (POCUS) in the diagnosis of deep vein thrombosis. *J Clin Med*. 2021;10(17):3903.
144. Adhikari S, Zeger W, Thom C, Fields JM. Isolated deep venous thrombosis: implications for 2-point compression ultrasonography of the lower extremity. *Ann Emerg Med*. 2015;66:262-6.
145. Frederick MG, Hertzberg BS, Kliewer MA, Paulson EK, Bowie JD, Lalouche KJ, DeLong DM,

Carroll BA. Can the US examination for lower extremity deep venous thrombosis be abbreviated? A prospective study of 755 examinations. *Radiology*. 1996;199:45-7.
146. Caronia J, Sarzynski A, Tofighi B, Mahdavi R-3. Resident performed two-point compression ultrasound is inadequate for diagnosis of deep vein thrombosis in the critically ill. *J Thromb Thrombolysis*. 2014;37:298-302.
147. Theodoro D, Blaivas M, Duggal S, et al. Real-time B-mode ultrasound in the ED saves time in the diagnosis of deep vein thrombosis (DVT). *Am J Emerg Med*. 2004;22:197-200.
148. Oppenheimer DC, Rubens DJ. Sonography of acute cholecystitis and its mimics. *Radiol Clin North Am*. 2019;57(3):535-48.
149. Blaivas M, Harwood RA, Lambert MJ. Decreasing length of stay with emergency department gallbladder ultrasonography. *Acad Emerg Med*. 1999;6:541.
150. Villar J, Summers SM, Menchine MD, et al. The absence of gallstones on point-of-care ultrasound rules out acute cholecystitis. *J Emerg Med*. 2015;49:475-80.
151. Kendall JL, Shimp RJ. Performance and interpretation of limited right upper quadrant ultrasound by emergency physicians. *J Emerg Med.* 2001;21(1)7-13.
152. Miller AH, Pepe PE, Brockman CR, et al. ED ultrasound in hepatobiliary disease. *J Emerg Med*. 2006;30:69-74.
153. Ross M, Brown M, McLaughlin K, et al. Emergency physician-performed ultrasound to diagnose cholelithiasis: a systematic review. *Acad Emerg Med*. 2011;18:227-35.
154. Summers SM, Scruggs W, Menchine MD, et al. A prospective evaluation of emergency department bedside ultrasonography for the detection of acute cholecystitis. *Ann Emerg Med*. 2010;56:114-22.
155. Graglia S, Shokoohi H, Loesche MA, Yeh DD, Haney RM, Huang CK, Morone CC, Springer C, Kimberly HH, Liteplo AS. Prospective validation of the bedside sonographic acute cholecystitis score in emergency department patients. *Am J Emerg Med*. 2021;42:15-9.
156. Seyedhosseini J, Nasrelari A, Mohammadrezaei N, Karimialavijeh E. Inter-rater agreement between trained emergency medicine residents and radiologists in the examination of gallbladder and common bile duct by ultrasonography. *Emerg Radiol*. 2017;24(2):171-6.
157. Lahham S, Becker BA, Gari A, Bunch S, Alvarado M, Anderson CL, Viquez E, Spann SC, Fox JC. Utility of common bile duct measurement in ED point of care ultrasound: A prospective study. *Am J Emerg Med*. 2018;36(6):962-6.
158. Ripollés T, Martínez-Pérez MJ, Martin G, Vizuete J, Martínez-García R, Diez J, Martí E. Usefulness of contrast-enhanced US in the diagnosis of acute gangrenous cholecystitis: A comparative study with surgical and pathological findings. *Eur J Radiol*. 2016;85(1):31-8.
159. Secko MA, Reardon L, Gottlieb M, et al. Musculoskeletal ultrasonography to diagnose dislocated shoulders: A prospective cohort. *Ann Emerg Med*. 2020;76(2):119-28.
160. Gottlieb M, Alerhand S. Ultrasound should be considered for all arthrocentesis. *Ann Emerg Med.* 2020;75(2):261-2.
161. Wu T, Dong Y, Song H, Fu Y, Li JH. Ultrasound-guided versus landmark in knee arthrocentesis: A systematic review. *Semin Arthritis Rheum*. 2016;45(5):627-32.
162. Berona K, Abdi A, Menchine M, et al. Success of ultrasound-guided versus landmark-guided arthrocentesis of hip, ankle, and wrist in a cadaver model. *Am J Emerg Med*. 2017;35(2):240-4.
163. Chartier LB, Bosco L, Lapointe-Shaw L, Chenkin J. Use of point-of-care ultrasound in long bone fractures: a systematic review and meta-analysis. *CJEM*. 2017;19(2):131-42.
164. Gottlieb M, Cosby K. Ultrasound-guided hematoma block for distal radial and ulnar fractures. *J Emerg Med*. 2015;48(3):310-2.
165. Bright JM, Fields KB, Draper R. Ultrasound diagnosis of calf injuries. *Sports Health*. 2017;9(4):352-5.
166. Franks N, Gress J, Joseph R. Point-of-care ultrasound for suspected pectoralis major rupture: A case report. *Clin Pract Cases Emerg Med*. 2021;5(1):93-6.
167. Schönberger TJ, Ernst MF. A brachialis muscle rupture diagnosed by ultrasound; case report. *Int J*

Emerg Med. 2011;4(1):46.
168. Situ-LaCasse E, Grieger RW, Crabbe S, Waterbrook AL, Friedman L, Adhikari S. Utility of point-of-care musculoskeletal ultrasound in the evaluation of emergency department musculoskeletal pathology. *World J Emerg Med*. 2018;9(4):262-6.
169. Connell DA, Schneider-Kolsky ME, Hoving JL, et al. Longitudinal study comparing sonographic and MRI assessments of acute and healing hamstring injuries. *AJR Am J Roentgenol*. 2004;183:975-84.
170. Albayda J, van Alfen N. Diagnostic value of muscle ultrasound for myopathies and myositis. *Curr Rheumatol Rep*. 2020;22(11):82.
171. Kumar MP, Seif D, Perera P, Mailhot T. Point-of-care ultrasound in diagnosing pyomyositis: a report of three cases. *J Emerg Med*. 2014;47(4):420-6.
172. Bionat ED, Ongchuan MA. The utility of musculoskeletal ultrasonography in diagnosing pyomyositis: a comparison with surgically and conservatively treated cases. *J Diagn Med Sonogr*. 2021;37(3):248-58.
173. Wu TS, Roque PJ, Green J, Drachman D, Khor KN, Rosenberg M, et al. Bedside ultrasound evaluation of tendon injuries. *Am J Emerg Med*. 2012;30(8):1617-21.
174. Hubbard D, Joing S, Smith SW. Pyogenic flexor tenosynovitis by point-of-care ultrasound in the emergency department. *Clin Pract Cases Emerg Med*. 2018;2(3):235-40.
175. Jardin E, Delord M, Aubry S, Loisel F, Obert L. Usefulness of ultrasound for the diagnosis of pyogenic flexor tenosynovitis: A prospective single-center study of 57 cases. *Hand Surg Rehabil*. 2018;37(2):95-8.
176. Gottlieb M, Holladay D, Peksa GD. Point-of-care ocular ultrasound for the diagnosis of retinal detachment: A systematic review and meta-analysis. *Acad Emerg Med*. 2019;26(8):931-9.
177. Lahham S, Shniter I, Thompson M, et al. Point-of-care ultrasonography in the diagnosis of retinal detachment, vitreous hemorrhage, and vitreous detachment in the emergency department. *JAMA Netw Open*. 2019;2(4):e192162.
178. Propst SL, Kirschner JM, Strachan CC, et al. Ocular point-of-care ultrasonography to diagnose posterior chamber abnormalities: A systematic review and meta-analysis. *JAMA Netw Open*. 2020;3(2):e1921460.
179. Harries A, Shah S, Teismann N, Price D, Nagdev A. Ultrasound assessment of extraocular movements and pupillary light reflex in ocular trauma. *Am J Emerg Med*. 2010 Oct;28(8):956-9.
180. Aletreby W, Alharthy A, Brindley PG, Kutsogiannis DJ, Faqihi F, Alzayer W, et al. Optic nerve sheath diameter ultrasound for raised intracranial pressure: A literature review and meta-analysis of its diagnostic accuracy. *J Ultrasound Med.* 2022;41(3):585-95.
181. Teismann N, Lenaghan P, Nolan R, Stein J, Green A. Point-of-care ocular ultrasound to detect optic disc swelling. *Acad Emerg Med*. 2013;20(9):920-5.
182. Tayal VS, Cohen H, Norton HJ. Outcome of patients with an indeterminate emergency department first-trimester pelvic ultrasound to rule out ectopic pregnancy. *Acad Emerg Med*. 2004;11(9):912-7.
183. Lewiss RE, Shaukat NM, Saul T. The endomyometrial thickness measurement for abnormal implantation evaluation by pelvic sonography. *J Ultrasound Med*. 2014 Jul;33(7):1143-6.
184. Wang R, Reynolds TA, West HH, Ravikumar D, Martinez C, McAlpine I, Jacoby VL, Stein JC. Use of a β-hCG discriminatory zone with bedside pelvic ultrasonography. *Ann Emerg Med*. 2011;58(1):12-20.
185. Stone BS, Muruganandan KM, Tonelli MM, Dugas JN, Verriet IE, Pare JR. Impact of point-of-care ultrasound on treatment time for ectopic pregnancy. *Am J Emerg Med*. 2021 Nov;49:226-32.
186. Moore C, Todd WM, O'Brien E, Lin H. Free fluid in Morison's pouch on bedside ultrasound predicts need for operative intervention in suspected ectopic pregnancy. *Acad Emerg Med*. 2007 Aug;14(8):755-8.
187. Stein JC, Wang R, Adler N, Boscardin J, Jacoby VL, Won G, Goldstein R, Kohn MA. Emergency physician ultrasonography for evaluating patients at risk for ectopic pregnancy: a meta-analysis. *Ann Emerg Med*. 2010;56(6):674-83.

188. Saul T, Lewiss RE, Rivera Mdel R. Accuracy of emergency physician performed bedside ultrasound in determining gestational age in first trimester pregnancy. *Crit Ultrasound J*. 2012;4(1):22.
189. Beals T, Naraghi L, Grossestreuer A, Schafer J, Balk D, Hoffmann B. Point of care ultrasound is associated with decreased ED length of stay for symptomatic early pregnancy. *Am J Emerg Med*. 2019;37(6):1165-8.
190. Berzon B, Gleenberg M, Offenbacher J, West D. Atypical presentation of hemorrhagic shock in pregnancy: a case highlighting the developing field of emergency medicine in Israel. *BMC Emerg Med*. 2019;19(1):70. Erratum in: *BMC Emerg Med*. 2020;20(1):4.
191. Derr C, Henry M. Bedside ultrasound in the diagnosis of uterine rupture following surgical abortion. *Emerg Radiol*. 2013;20(2):165-7.
192. Wiese KS, Ernest S, Dukes WS. Case report of traumatic uterine rupture in a multigravida woman with emergency department cesarean section. *Clin Pract Cases Emerg Med*. 2020;4(4):623-5.
193. Adkins K, Minardi J, Setzer E, Williams D. Retained products of conception: An atypical presentation diagnosed immediately with bedside emergency ultrasound. *Case Rep Emerg Med*. 2016;2016:9124967.
194. Brass P, Hellmich M, Kolodziej L, Schick G, Smith AF. Ultrasound guidance versus anatomical landmarks for internal jugular vein catheterization. *Cochrane Database Syst Rev*. 2015;1(1):CD006962.
195. Brass P, Hellmich M, Kolodziej L, Schick G, Smith AF. Ultrasound guidance versus anatomical landmarks for subclavian or femoral vein catheterization. *Cochrane Database Syst Rev*. 2015;1(1):CD011447.
196. Agency for Healthcare Research and Quality. Evidence Report/Technology Assessment: Number 43. Making Health Care Safer. A Critical Analysis of Patient Safety Practices: Summary. Accessed January 2, 2023. Available at: http://archive.ahrq.gov/clinic/ptsafety/pdf/ptsafety.pdf.
197. Cattau EL Jr, Benjamin SB, Knuff TE, Castell DO. The accuracy of the physical examination in the diagnosis of suspected ascites. *JAMA*. 1982;247(8):1164-6.
198. Nazeer SR, Dewbre H, Miller AH. Ultrasound-assisted paracentesis performed by emergency physicians vs the traditional technique: a prospective, randomized study. *Am J Emerg Med*. 2005;23(3):363-7.
199. Mercaldi CJ, Lanes SF. Ultrasound guidance decreases complications and improves the cost of care among patients undergoing thoracentesis and paracentesis. *Chest*. 2013;143(2):532-8.
200. Patel PA, Ernst FR, Gunnarsson CL. Ultrasonography guidance reduces complications and costs associated with thoracentesis procedures. *J Clin Ultrasound*. 2012;40(3):135-41.
201. Gordon CE, Feller-Kopman D, Balk EM, Smetana GW. Pneumothorax following thoracentesis: a systematic review and meta-analysis. *Arch Intern Med*. 2010;170(4):332-9.
202. Costantino TG, Satz WA, Dehnkamp W, Goett H. Randomized trial comparing intraoral ultrasound to landmark-based needle aspiration in patients with suspected peritonsillar abscess. *Acad Emerg Med*. 2012;19(6):626-31.
203. Tsang TS, Enriquez-Sarano M, Freeman WK, Barnes ME, Sinak LJ, Gersh BJ, Bailey KR, Seward JB. Consecutive 1127 therapeutic echocardiographically guided pericardiocenteses: clinical profile, practice patterns, and outcomes spanning 21 years. *Mayo Clin Proc*. 2002;77(5):429-36.
204. Lindenberger M, Kjellberg M, Karlsson E, Wranne B. Pericardiocentesis guided by 2-D echocardiography: the method of choice for treatment of pericardial effusion. *J Intern Med*. 2003;253(4):411-7.
205. Gottlieb M, Avila J, Chottiner M, Peksa GD. Point-of-care ultrasonography for the diagnosis of skin and soft tissue abscesses: A systematic review and meta-analysis. *Ann Emerg Med*. 2020;76(1):67-77.
206. Marin JR, Dean AJ, Bilker WB, Panebianco NL, Brown NJ, Alpern ER. Emergency ultrasound-assisted examination of skin and soft tissue infections in the pediatric emergency department. *Acad Emerg Med.* 2013;20(6):545-53.
207. Schmitz GR, Gottlieb M. Managing a cutaneous abscess in the emergency department. *Ann Emerg*

Med. 2021;78(1):44-8.
208. Davis J, Czerniski B, Au A, Adhikari S, Farrell I, Fields JM. Diagnostic Accuracy of Ultrasonography in Retained Soft Tissue Foreign Bodies: A Systematic Review and Meta-analysis. *Acad Emerg Med*. 2015;22(7):777-87.
209. Lahham S, Shniter I, Desai M, Andary R, Saadat S, Fox JC, Pierce S. Point of care ultrasound in the diagnosis of necrotizing fasciitis. *Am J Emerg Med*. 2022;51:397-400.
210. Yen Z, Wang H, Ma H, Chen S, Chen W. Ultrasonographic screening of clinically-suspected necrotizing fasciitis. *Acad Emerg Med.* 2002;9(12):1448-51.
211. Wright S, Hoffmann B. Emergency ultrasound of acute scrotal pain. *Eur J Emerg Med*. 2015;22(1):2-9.
212. Ramanathan S, Bertolotto M, Freeman S, et al. Imaging in scrotal trauma: a European Society of Urogenital Radiology Scrotal and Penile Imaging Working Group (ESUR-SPIWG) position statement. *Eur Radiol.* 2021;31:4918-28.
213. Ota K, Fukui K, Oba K, et al. The role of ultrasound imaging in adult patients with testicular torsion: a systematic review and meta-analysis. *J Med Ultrasonics.* 2019;46:325-34.
214. Liang T, Metcalfe P, Sevcik W, Noga M. Retrospective review of diagnosis and treatment in children presenting to the pediatric department with acute scrotum. *AJR Am J Roentgenol.* 2013;200:5.
215. Blaivas M, Sierzenski P. Emergency ultrasonography in the evaluation of the acute scrotum. *Acad Emerg Med*. 2001;8(1):85-9.
216. Blaivas M, Sierzenski P, Lambert M. Emergency evaluation of patients presenting with acute scrotum using bedside ultrasonography. *Acad Emerg Med*. 2001;8(1):90-3.
217. Friedman N, Pancer Z, Savic R, Tseng F, Lee MS, Mclean L, Bagli DJ, Tessaro MO. Accuracy of point-of-care ultrasound by pediatric emergency physicians for testicular torsion. *J Pediatr Urol*. 2019;15(6):608.e1-608.e6.
218. McDowall J, Adam A, Gerber L, et al. The ultrasonographic "whirlpool sign" in testicular torsion: valuable tool or waste of valuable time? A systematic review and meta-analysis. *Emerg Radiol.* 2018;25:281-92.
219. Morrison D, Blaivas M, Lyon M. Emergency diagnosis of Fournier's gangrene with bedside ultrasound. *Am J Emerg Med*. 2005;23(4):544-7.
220. Sadjo SA, Destinval C, Lemelle JL, Berte N. Testicular rupture after blunt scrotal trauma in children: A case report and literature review. *Trauma Case Rep*. 2021;33:100482.
221. McGivery K, Atkinson P, Lewis D, et al. Emergency department ultrasound for the detection of B-lines in the early diagnosis of acute decompensated heart failure: a systematic review and meta-analysis. *CJEM*. 2018;20(3):343-52.
222. Orso D, Guglielmo N, Copetti R. Lung ultrasound in diagnosing pneumonia in the emergency department: a systematic review and meta-analysis. *Eur J Emerg Med*. 2018;25(5):312-21.
223. Alzahrani SA, Al-Salamah MA, Al-Madani WH, et al. Systematic review and meta-analysis for the use of ultrasound versus radiology in diagnosing of pneumonia. *Crit Ultrasound J*. 2017;9(1):6.
224. Lu X, Jin Y, Li Y, et al. Diagnostic accuracy of lung ultrasonography in childhood pneumonia: a meta-analysis. *Eur J Emerg Med*. 2022;29(2):105-17.
225. Pereda MA, Chavez MA, Hooper-Miele CC, et al. Lung ultrasound for the diagnosis of pneumonia in children: a meta-analysis. *Pediatrics.* 2015;135(4):714-22.
226. Gil-Rodriguez J, de Rojas JP, Aranda-Laserna P, et al. Ultrasound findings of lung ultrasonography in COVID-19: A systematic review. *Eur J Radiol.* 2022;148:110156.
227. Hosseini M, Ghelichkhani P, Baikpour M, et al. Diagnostic accuracy of ultrasonography and radiography in detection of pulmonary contusion; a systematic review and meta-Analysis. *Emerg (Tehran)*. 2015;3(4):127-36.
228. Hansell L, Milross M, Delaney A, et al. Lung ultrasound has greater accuracy than conventional respiratory assessment tools for the diagnosis of pleural effusion, lung consolidation and collapse: a systematic review. *J Physiother*. 2021;67(1):41-8.

229. Zare MA, Bahmani A, Fathi M, et al. Role of point-of-care ultrasound study in early disposition of patients with undifferentiated acute dyspnea in emergency department: a multi-center prospective study. *J Ultrasound*. 2022;25(3):443-9.
230. Gottlieb M, Holladay D, Burns KM, Nakitende D, Bailitz J. Ultrasound for airway management: An evidence-based review for the emergency clinician. *Am J Emerg Med*. 2020;38(5):1007-13.
231. Adhikari S, Zeger W, Schmier C, et al. Pilot study to determine the utility of point-of-care ultrasound in the assessment of difficult laryngoscopy. *Acad Emerg Med*. 2011;18(7):754-8.
232. Gottlieb M, Holladay D, Peksa GD. Ultrasonography for the Confirmation of Endotracheal Tube Intubation: A Systematic Review and Meta-Analysis. *Ann Emerg Med*. 2018;72(6):627-36.
233. Gottlieb M, Holladay D, Serici A, Shah S, Nakitende D. Comparison of color flow with standard ultrasound for the detection of endotracheal intubation. *Am J Emerg Med*. 2018;36(7):1166-9.
234. Gottlieb M, Nakitende D, Sundaram T, Serici A, Shah S, Bailitz J. Comparison of Static versus Dynamic Ultrasound for the Detection of Endotracheal Intubation. *West J Emerg Med.* 2018;19(2):412-6.
235. Gottlieb M, Holladay D, Burns K, et al. Accuracy of ultrasound for endotracheal intubation between different transducer types. *Am J Emerg Med.* 2019;37(12):2182-5.
236. Gottlieb M, Holladay D, Nakitende D, et al. Variation in the accuracy of ultrasound for the detection of intubation by endotracheal tube size. *Am J Emerg Med.* 2019;37(4):706-9.
237. Gottlieb M, Burns K, Holladay D, Chottiner M, Shah S, Gore SR. Impact of endotracheal tube twisting on the diagnostic accuracy of ultrasound for intubation confirmation. *Am J Emerg Med*. 2020;38(7):1332-4.
238. Gottlieb M, Alerhand S, Long B. Point-of-Care Ultrasound for Intubation Confirmation of COVID-19 Patients. *West J Emerg Med*. 2020;21(5):1042-5.
239. Gottlieb M, Patel D, Sundaram T. Comparison of endotracheal tube location on ultrasound accuracy, time, and confidence. *Am J Emerg Med*. 2022 Dec;62:127-128.
240. Link MS, Berkow LC, Kudenchuk PJ, et al. Part 7: Adult Advanced Cardiovascular Life Support: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation.* 2015;132(18 Suppl 2):S444-S464.
241. Mallin M, Curtis K, Dawson M, Ockerse P, Ahern M. Accuracy of ultrasound-guided marking of the cricothyroid membrane before simulated failed intubation. *Am J Emerg Med.* 2014;32(1):61-3.
242. Siddiqui N, Yu E, Boulis S, You-Ten KE. Ultrasound Is Superior to Palpation in Identifying the Cricothyroid Membrane in Subjects with Poorly Defined Neck Landmarks: A Randomized Clinical Trial. *Anesthesiology*. 2018;129(6):1132-9.
243. Curtis K, Ahern M, Dawson M, Mallin M. Ultrasound-guided, Bougie-assisted cricothyroidotomy: a description of a novel technique in cadaveric models. *Acad Emerg Med*. 2012;19(7):876-9.
244. ATLS Subcommittee; American College of Surgeons' Committee on Trauma; International ATLS working group. Advanced trauma life support (ATLS®): the ninth edition. *J Trauma Acute Care Surg*. 2013;74(5):1363-6.
245. Pearl WS, Todd KH. Ultrasonography for the initial evaluation of blunt abdominal trauma: A review of prospective trials. *Ann Emerg Med*. 1996;27(3):353-61.
246. American Institute of Ultrasound in Medicine; American College of Emergency Physicians. AIUM practice guideline for the performance of the focused assessment with sonography for trauma (FAST) examination. *J Ultrasound Med*. 2014;33(11):2047-56. Accessed December 2022 at: https://www.aium.org/resources/guidelines/fast.pdf
247. Jahanshir A, Moghari SM, Ahmadi A, Moghadam PZ, Bahreini M. Value of point-of-care ultrasonography compared with computed tomography scan in detecting potential life-threatening conditions in blunt chest trauma patients. *Ultrasound J*. 2020;12(1):36.
248. Volpicelli G, Elbarbary M, Blaivas M, et al. International evidence-based recommendations for point-of-care lung ultrasound. *Intensive Care Med*. 2012;38:577-91.
249. Governatori NJ, Saul T, Siadecki SD, Lewiss RE. Ultrasound in the evaluation of penetrating

thoraco-abdominal trauma: a review of the literature. *Med Ultrason*. 2015;17(4):528-34.
250. Melniker LA, Leibner E, McKenney MG, Lopez P, Briggs WM, Mancuso CA. Randomized controlled clinical trial of point-of-care, limited ultrasonography for trauma in the emergency department: the first sonography outcomes assessment program trial. *Ann Emerg Med*. 2006;48(3):227-35.
251. Sheng AY, Dalziel P, Liteplo AS, et al. Focused assessment with sonography in trauma and abdominal computed tomography utilization in adult trauma patients: Trends over the last decade. *Emerg Med Int*. 2013;2013:678380.
252. American College of Emergency Physicians. Ultrasound Guided Nerve Blocks [policy statement]. Approved April 2021. Accessed November 18, 2022. Available from: https://www.acep.org/globalassets/new-pdfs/policy-statements/ultrasound-guided-nerve-blocks.pdf
253. Welch MB, Brummett CM, Welch TD, Tremper KK, Shanks AM, Guglani P, Mashour GA. Perioperative peripheral nerve injuries: a retrospective study of 380,680 cases during a 10-year period at a single institution. *Anesthesiology*. 2009;111(3):490-7.
254. Sites BD, Barrington MJ, Davis M. Using an international clinical registry of regional anesthesia to identify targets for quality improvement. *Reg Anesth Pain Med*. 2014;39(6):487-95.
255. Raeyat Doost E, Heiran MM, Movahedi M, Mirafzal A. Ultrasound-guided interscalene nerve block vs procedural sedation by propofol and fentanyl for anterior shoulder dislocations. *Am J Emerg Med.* 2017;35(10):1435-9.
256. Abdelhamid K, ElHawary H, Turner JP. The use of the erector spinae plane block to decrease pain and opioid consumption in the emergency department: A literature review. *J Emerg Med*. 2020;58(4):603-9.
257. Tekşen Ş, Öksüz G, Öksüz H, Sayan M, Arslan M, Urfalıoğlu A, Gişi G, Bilal B. Analgesic efficacy of the serratus anterior plane block in rib fractures pain: A randomized controlled trial. *Am J Emerg Med*. 2021;41:16-20.
258. Surdhar I, Jelic T. The erector spinae plane block for acute pain management in emergency department patients with rib fractures. *CJEM*. 2022;24(1):50-4.
259. Aydin ME, Tekin E, Ahiskalioglu EO, Ates I, Karagoz S, Aydin OF, Ozkaya F, Ahiskalioglu A. Erector spinae plane block vs non-steroidal anti-inflammatory drugs for severe renal colic pain: A pilot clinical feasibility study. *Int J Clin Pract*. 2021;75(3):e13789.
260. Herring AA, Stone MB, Nagdev AD. Ultrasound-guided abdominal wall nerve blocks in the ED. *Am J Emerg Med*. 2012;30(5):759-64.
261. Mahmoud S, Miraflor E, Martin D, Mantuani D, Luftig J, Nagdev AD. Ultrasound-guided transverse abdominis plane block for ED appendicitis pain control. *Am J Emerg Med*. 2019;37(4):740-3.
262. Brox WT, Roberts KC, Taksali S, Wright DG, Wixted JJ, Tubb CC, et al. The American Academy of Orthopaedic Surgeons Evidence-Based Guideline on Management of Hip Fractures in the Elderly. *J Bone Joint Surg Am*. 2015;97(14):1196-9.
263. American College of Surgeons. Best practices guidelines for acute pain management in trauma patients. November 2020. Available at: https://www.facs.org/-/media/files/quality-programs/trauma/tqip/acute_pain_guidelines.ashx
264. Guay J, Kopp S. Peripheral nerve blocks for hip fractures in adults. *Cochrane Database Syst Rev*. 2020 Nov 25;11(11):CD001159.
265. Kolodychuk N, Krebs JC, Stenberg R, Talmage L, Meehan A, DiNicola N. Fascia iliaca blocks performed in the emergency department decrease opioid consumption and length of stay in patients with hip fracture. *J Orthop Trauma*. 2022;36(3):142-6.
266. Makkar JK, Singh NP, Bhatia N, Samra T, Singh PM. Fascia iliaca block for hip fractures in the emergency department: meta-analysis with trial sequential analysis. *Am J Emerg Med*. 2021;50:654-60.
267. Luftig J, Dreyfuss A, Mantuani D, Howell K, White A, Nagdev A. A new frontier in pelvic fracture pain control in the ED: Successful use of the pericapsular nerve group (PENG) block. *Am J Emerg*

Med. 2020;38(12):2761.e5-2761.e9.
268. Goldsmith AJ, Liteplo A, Hayes BD, Duggan N, Huang C, Shokoohi H. Ultrasound-guided transgluteal sciatic nerve analgesia for refractory back pain in the ED. *Am J Emerg Med.* 2020;38(9):1792-5.
269. Cisewski DH, Alerhand S. 'SCALD-ED' Block: Superficial Cutaneous Anesthesia in a Lateral Leg Distribution within the Emergency Department - A Case Series. *J Emerg Med*. 2019;56(3):282-7.
270. Vrablik M, Akhavan A, Murphy D, Schrepel C, Hall MK. Ultrasound-guided nerve blocks for painful hand injuries: A randomized control trial. *Cureus.* 2021;13(10):e18978.
271. Moore CL, Carpenter CR, Heilbrun ME, et al. Imaging in suspected renal colic: systematic review of the literature and multispecialty consensus. *Ann Emerg Med.* 2019;74(3):391-9.
272. Park YH, Jung RB, Lee YG, et al. Does the use of bedside ultrasonography reduce emergency department length of stay for patients with renal colic?: a pilot study. *Clin Exp Emerg Med*. 2016;3(4):197-203.
273. Wong C, Teitge B, Ross M, Young P, Robertson HL, Lang E. The accuracy and prognostic value of point-of-care ultrasound for nephrolithiasis in the emergency department: A systematic review and meta-analysis. *Acad Emerg Med*. 2018;25(6):684-98.
274. Smith-Bindman R, Aubin C, Bailitz J, et al. Ultrasonography versus computed tomography for suspected nephrolithiasis. *N Engl J Med.* 2014;371:1100-10.
275. Herbst MK, Rosenberg G, Daniels B, et al. Effect of provider experience on clinician-performed ultrasonography for hydronephrosis in patients with suspected renal colic. *Ann Emerg Med*. 2014;64(3):269-76.
276. Daniels B, Gross CP, Molinaro A, et al. STONE PLUS: Evaluation of emergency department patients with suspected renal colic, using a clinical prediction tool combined with point-of-care limited ultrasonography. *Ann Emerg Med*. 2016;67(4):439-48.
277. Witt M, Baumann BM, McCans K. Bladder ultrasound increases catheterization success in pediatric patients. *Acad Emerg Med*. 2005;12(4):371-4.
278. Lambert MJ, Villa M. Gynecologic ultrasound in emergency medicine. *Emerg Med Clin North Am*. 2004;22(3):683-96.
279. Tayal VS, Crean CA, Norton HJ, Schulz CJ, Bacalis KN, Bliss S. Prospective comparative trial of endovaginal sonographic bimanual examination versus traditional digital bimanual examination in nonpregnant women with lower abdominal pain with regard to body mass index classification. *J Ultrasound Med*. 2008;27(8):1171-7.
280. Houry D, Abbott JT. Ovarian torsion: a fifteen-year review. *Ann Emerg Med*. 2001;38(2):156-9.
281. Johnson S, Fox JC, Koenig KL. Diagnosis of ovarian torsion in a hemodynamically unstable pediatric patient by bedside ultrasound in the ED. *Am J Emerg Med*. 2006;24(4):496-7.
282. Lee DC, Swaminathan AK. Sensitivity of ultrasound for the diagnosis of tubo-ovarian abscess: a case report and literature review. *J Emerg Med*. 2011;40(2):170-5.
283. Adhikari S, Blaivas M, Lyon M. Role of bedside transvaginal ultrasonography in the diagnosis of tubo-ovarian abscess in the emergency department. *J Emerg Med*. 2008;34(4):429-33.
284. Bellapu S, Guttman J. Use of point-of-care ultrasound for the diagnosis of ovarian hyperstimulation syndrome. *J Emerg Med*. 2017;52(4):e101-e104.
285. Hall MK, Coffey EC, Herbst M, Liu R, Pare JR, Taylor RA, Thomas S, Moore CL. The 5Es of emergency physician-performed focused cardiac ultrasound: a protocol for rapid identification of effusion, ejection, equality, exit and entrance. *Acad Emerg Med*. 2015;22(5):583-93.
286. Alerhand S, Adrian RJ, Long B, Avila J. Pericardial tamponade: A comprehensive emergency medicine and echocardiography review. *Am J Emerg Med*. 2022;58:159-74.
287. Ehrman RR, Russel FM, Ansari AH, Margeta B, Clary JM, Christian E, Cosby KS, Bailitz J. Can emergency physicians diagnose and correctly classify diastolic dysfunction using bedside echocardiography? *Am J Emerg Med*. 2015;33(9):1178-83.
288. Del Rios M, Colla J, Kotini-Shah P, Briller J, Gerber B, Prendergast H. Emergency physician use of

tissue Doppler bedside echocardiography in detecting diastolic dysfunction: an exploratory study. *Crit Ultrasound J*. 2018;10(1):4.
289. Alerhand S, Sundaram T, Gottlieb M. What are the echocardiographic findings of acute right ventricular strain that suggest pulmonary embolism? *Anaesth Crit Care Pain Med*. 2021;40(2):100852.
290. Daley J, Grotberg J, Pare J, Medoro A, Liu R, Hall MK, Taylor A, Moore CL. Emergency physician performed tricuspid annular plane systolic excursion in the evaluation of suspected pulmonary embolism. *Am J Emerg Med*. 2017;35(1):106-11.
291. Shah BR, Velamakanni WM, Patel A, Khadkikar G, Patel TM, Shah SC. Analysis of the 60/60 sign and other right ventricular parameters by 2D transthoracic echocardiography as adjuncts to diagnosis of acute pulmonary embolism. *Cureus*. 2021;13(3): e13800.
292. Croft PE, Strout TD, Kring RM, Director L, Vasaiwala SC, Mackenzie DC. WAMAMI: emergency physicians can accurately identify wall motion abnormalities in acute myocardial infarction. *Am J Emerg Med.* 2019;37(12): 2224-8.
293. Saglam C, Unluer EE, Yamanoglu NGC, Kara PH, Ediboglu E, Bektasli R, Tandon S, Gonulu H. Accuracy of emergency physicians for detection of regional wall motion abnormalities in patients with chest pain without ST-elevation myocardial infarction. *J Ultrasound Med*. 2021;40(7):1335-42.
294. Dinh VA, Ko HS, Rao R, Bansal RC, Smith DD, Kin TE, Nguyen HB. Measuring cardiac index with a focused cardiac ultrasound examination in the ED. *Am J Emerg Med*. 2012;30(9):1845-51.
295. MacKenzie DC, Khan NA, Blehar D, Glazier S, Chang Y, Stowell CP, Noble VE, Liteplo AS. Carotid flow time changes with volume status in acute blood loss. *Ann Emerg Med.* 2015;66(3):277-282.
296. Hu K, Gupta N, Teran F, Saul T, Nelson BP, Andrus P. Variability in interpretation of cardiac standstill among physician sonographers. *Ann Emerg Med*. 2018;71(2):193-8.
297. Clattenburg EJ, Wroe PC, Gardner K, Schultz C, Gelber J, Singh A, Nagdev A. Implementation of the cardiac arrest sonographic assessment (CASA) protocol for patients with cardiac arrest is associated with shorter CPR pulse checks. *Resuscitation*. 2018;131:69-73.
298. Liu RB, Bogucki S, Marcolini EG, Yu CY, Wira CR, Kalam S, Daley J, Moore CL, Cone DC. Guiding cardiopulmonary resuscitation with focused echocardiography: a report of five cases. *Prehosp Emerg Care*. 2020;24(2): 297-302.
299. Gaspari R, Weekes A, Adhikari S, Noble V, Nomura JT, Theodoro D, et al. A retrospective study of pulseless electrical activity, bedside ultrasound identifies interventions during resuscitation associated with improved survival to hospital admission. A REASON study. *Resuscitation*. 2017;120:103-7.
300. Kummer T, Oh L, Phelan MB, Huang RD, Nomura JT, Adhikari S. Emergency and critical care applications for contrast-enhanced ultrasound. *Am J Emerg Med*. 2018;36(7):1287-94.
301. Catalano O, Aiani L, Barozzi L, Bokor D, De Marchi A, Faletti C, et al. CEUS in abdominal trauma: multi-center study. *Abdom Imaging*. 2009;34(2):225-34.
302. Tang C, Fang K, Guo Y, Li R, Fan X, Chen P, et al. Safety of sulfur hexafluoride microbubbles in sonography of abdominal and superficial organs: retrospective analysis of 30,222 cases. *J Ultrasound Med*. 2017;36(3):531-8.
303. Catalano O, Lobianco R, Cusati B, Siani A. Contrast-enhanced sonography for diagnosis of ruptured abdominal aortic aneurysm. *AJR Am J Roentgenol*. 2005;184(2):423-7.
304. El Kadi S, Porter TR, Verouden N, van Rossum A, Kamp O. Contrast ultrasound, sonothrombolysis and sonoperfusion in cardiovascular disease: shifting to theragnostic clinical trials. *JACC Cardiovasc Imaging.* 2021 Oct 7;S1936-878X(21)00689-6.
305. Emanuel A, Meijer R, Poelgeest E, Spoor P, Serne E, Eringa E. Contrast-enhanced ultrasound for quantification of tissue perfusion in humans. *Microcirculation*. 2020;27(1):e12588.
306. Hakim SM, Abdellatif AA, Ali MI, Ammar MA. Reliability of transcranial sonography for assessment of brain midline shift in adult neurocritical patients: a systematic review and meta-analysis. *Minerva Anestesiol*. 2021;87(4):467-75.

307. Kumar G, Shahripour RB, Harrigan MR. Vasospasm on transcranial Doppler is predictive of delayed cerebral ischemia in aneurysmal subarachnoid hemorrhage: a systematic review and meta-analysis. *J Neurosurg.* 2016;124(5):1257-64.
308. Zhang XH, Liang HM. Systematic review with network meta-analysis: Diagnostic values of ultrasonography, computed tomography, and magnetic resonance imaging in patients with ischemic stroke. *Medicine (Baltimore).* 2019;98(30):e16360.
309. Fernando SM, Tran A, Cheng W, et al. Diagnosis of elevated intracranial pressure in critically ill adults: systematic review and meta-analysis. *BMJ.* 2019;366:l4225.
310. Chang JJ, Tsivgoulis G, Katsanos AH, Malkoff MD, Alexandrov AV. Diagnostic Accuracy of Transcranial Doppler for Brain Death Confirmation: Systematic Review and Meta-Analysis. *AJNR Am J Neuroradiol*. 2016;37(3):408-14.
311. van der Wouw PA, Koster RW, Delemarre BJ, et al. Diagnostic accuracy of transesophageal echocardiography during cardiopulmonary resuscitation. *J Am Coll Cardiol*. 1997;30(3):780-3.
312. Varriale P, Maldonado JM. Echocardiographic observations during in hospital cardiopulmonary resuscitation. *Crit Care Med*. 1997;25(10):1717-20.
313. Miyake M, Izumi C, Takahashi S, et al. Efficacy of transesophageal echocardiography in patients with cardiac arrest or shock. *J Cardiol.* 2004;44(5):189-94.
314. Memtsoudis SG, Rosenberger P, Loffler M, et al. The usefulness of transesophageal echocardiography during intraoperative cardiac arrest in noncardiac surgery. *Anesth Analg*. 2006;102(6):1653-7.
315. Lin T, Chen Y, Lu C, et al. Use of transoesophageal echocardiography during cardiac arrest in patients undergoing elective non-cardiac surgery. *Br J Anaesth.* 2006;96(2):167-70.
316. Shillcutt SK, Markin NW, Montzingo CR, et al. Use of rapid "rescue" perioperative echocardiography to improve outcomes after hemodynamic instability in noncardiac surgical patients. *J Cardiothorac Vasc Anesth*. 2012;26(3):362-70.
317. Hilberath JN, Burrage PS, Shernan SK, et al. Rescue transoesophageal echocardiography for refractory haemodynamic instability during transvenous lead extraction. *Eur Heart J Cardiovasc Imaging*. 2014;15(8):926-32.
318. Arntfield R, Pace J, Hewak M, Thompson D. Focused transesophageal echocardiography by emergency physicians is feasible and clinically influential: observational results from a novel ultrasound program. *J Emerg Med*. 2016;50(2):286-94.
319. Reardon RF, Chinn E, Plummer D, et al. Feasibility, utility, and safety of fully incorporating transesophageal echocardiography into emergency medicine practice. *Acad Emerg Med*. 2022;29(3):334-43.
320. Hwang SO, Zhao PG, Choi HJ, et al. Compression of the left ventricular outflow tract during cardiopulmonary resuscitation. *Acad Emerg Med*. 2009;16(10):928-33.
321. Cha KC, Kim YJ, Shin HJ, et al. Optimal position for external chest compression during cardiopulmonary resuscitation: an analysis based on chest CT in patients resuscitated from cardiac arrest. *Emerg Med J*. 2013;30(8):615-9.
322. Teran F, Dean AJ, Centeno C, et al.; Evaluation of out-of-hospital cardiac arrest using transesophageal echocardiography in the emergency department. *Resuscitation*. 2019;137:140-7.
323. Catena E, Ottolina D, Fossali T, et al. Association between left ventricular outflow tract opening and successful resuscitation after cardiac arrest. *Resuscitation*. 2019;138:8-14.
324. Fair J 3rd, Mallin MP, Adler A, et al. Transesophageal echocardiography during cardiopulmonary resuscitation is associated with shorter compression pauses compared with transthoracic echocardiography. *Ann Emerg Med*. 2019;73(6):610-6.
325. Lerner RP, Haaland A, Lin J. Temporary transvenous pacer placement under transesophageal echocardiogram guidance in the Emergency Department. *Am J Emerg Med*. 2020;38(5):1044.e3-1044.e4.
326. Fair J, Tonna J, Ockerse P. Emergency physician-performed transesophageal echocardiography for

extracorporeal life support vascular cannula placement. *Am J Emerg Med*. 2016; 34(8):1637-9.
327. Teran F, Abella B. (2021, July -). Resuscitative TEE collaborative registry (rTEECoRe). Identifier NCT04972526. https://www.clinicaltrials.gov/ct2/show/NCT04972526

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Ultrasound Services in the Emergency Department

Revised June 2022 with current title

Originally approved June 2016 titled "Payment for Ultrasound Services in the Emergency Department"

The American College of Emergency Physicians (ACEP) recognizes clinical ultrasonography as a distinct modality that provides clinically significant data not obtainable by inspection, palpation, auscultation, or other components of the physical examination. ACEP affirms that emergency physicians have the training and expertise to perform and interpret diagnostic ultrasound examinations. Emergency physician use of ultrasound provides timely and cost efficient means to accurately diagnose the emergency department (ED)-presenting illness and injury in order to provide higher quality, lower cost care. ED ultrasound use can often reduce the need for more expensive studies, such as CTs or MRIs, and reduce unnecessary admissions for more comprehensive diagnostic workups. Ultrasound use in the ED that is appropriately performed and documented should be fairly compensated.

AMA current procedural terminology (CPT) clearly states the performance and/or interpretation of ultrasound studies performed during a patient encounter are not included in the levels of evaluation and management (E/M) service and may be separately reported:

"The ordering and actual performance and/or interpretation of diagnostic tests/studies during a patient encounter are not included in the levels of E/M services when the professional interpretation of those tests/studies is reported separately by the physician or other qualified healthcare professional reporting the E/M service."

Physician performance of diagnostic tests/studies for which specific CPT codes are available may be reported separately, in addition to the appropriate E/M code. The physician's interpretation of the results of diagnostic tests/studies (ie, professional component) with preparation of a separate distinctly identifiable signed written report may also be reported separately, using the appropriate CPT code and, if required, with modifier 26 appended. If a test/study is independently interpreted in order to manage the patient as part of the E/M service, but is not separately reported, it is part of the medical decision making.

Per AMA CPT guidance referenced above, payment for separately reported interpretation of ultrasound services should not be bundled into any payment for evaluation and management services. ACEP concurs that only ultrasound examinations and procedures which are permanently recorded, retrievable, and interpreted by a physician should be separately reported.

ACEP opposes exclusive contracting requirements from hospitals that prohibit emergency physicians from billing for the medically necessary contemporaneous ultrasound interpretations they perform in the care of their patients.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Universal Bicycle Helmet Use

Reaffirmed February 2023, January 2017, April 2011, and September 2005

Originally approved June 1999

The American College of Emergency Physicians (ACEP) recommends that:

- All bicyclists wear a properly fitted Consumer Product Safety Commission (CPSC)-approved bicycle helmet.
- Emergency physicians inform patients and parents of the importance of wearing a bicycle helmet and the dangers of riding without a helmet.
- Retail and rental bicycle outlets have available low-cost CPSC-approved helmets for bicyclists.
- Helmet manufacturers provide educational materials that emphasize the advantages of protective headgear.
- State and local governments enact legislation requiring universal helmet use.
- Community coalitions be developed to promote bicycle safety training, including helmet use.
- The popular media depict helmet use among all bicyclists.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Universal Health Care Coverage

Reaffirmed January 2021, June 2015

Revised August 2009

Originally approved December 1999

The American College of Emergency Physicians (ACEP) believes:

- All Americans must have health care coverage;
- Health care coverage will contain a benefits package that provides for timely, unrestricted access to quality emergency care;
- Any benefit package should reflect generally accepted standards of medical practice supported by outcome-based evidence, where available.

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2024

Unscheduled Procedural Sedation: A Multidisciplinary Consensus Practice Guideline

Reaffirmed January 2024

Originally approved September 2018

This guideline has been organized by the American College of Emergency Physicians and has been endorsed by the American Academy of Emergency Medicine, the American Board of Emergency Medicine, the American College of Cardiology, the American College of Medical Toxicology, the American College of Osteopathic Emergency Physicians, the Association of Academic Chairs of Emergency Medicine, the Emergency Medicine Residents' Association, the Emergency Nurses Association, the Society for Academic Emergency Medicine, and the Society for Pediatric Sedation.

Author list: Steven M. Green, MD; Mark G. Roback, MD; Baruch S. Krauss, MD, EdM; James R. Miner, MD; Sandra Schneider, MD; Paul D. Kivela, MD, MBA; Lewis S. Nelson, MD; Corrie E. Chumpitazi, MD, MS; John D. Fisher, MD; Dan Gesek, DMD; Benjamin Jackson, MD; Pradip Kamat, MD; Terry Kowalenko, MD; Brandon Lewis, DO, MBA; Michele Papo, MD, MPH; Don Phillips, DO; Sonny Ruff, DNP, RN, CEN; Daniel Runde, MD; Thomas Tobin, MD, MBA; Nathan Vafaie, MD; John Vargo II, MD, MPH; Eric Walser, MD; Donald M. Yealy, MD; Robert E. O'Connor, MD.

Acknowledgement: We gratefully thank Travis Schulz, MLS, AHIP for his tremendous support in this project.

ABSTRACT

The American College of Emergency Physicians organized a multidisciplinary effort to create a clinical practice guideline specific to unscheduled, time-sensitive procedural sedation, which differs in important ways from scheduled, elective procedural sedation. The purpose of this guideline is to serve as a resource for practitioners who perform unscheduled procedural sedation regardless of location or patient age. This document outlines the underlying background and rationale, and issues relating to staffing, practice, and quality improvement.

INTRODUCTION

The provision of sedation and analgesia to facilitate the humane performance of painful and/or anxiety-provoking procedures is now a widespread and integral practice for a variety of specialists. The safety of procedural sedation is supported by a large and robust body of literature, with serious adverse events being extremely rare. The multidisciplinary field of procedural sedation has fostered a strong safety culture following many decades of close attention to provider training, patient evaluation, physiologic monitoring, and other critical safeguards.[1-41]

Various specialty societies, including the American College of Emergency Physicians (ACEP), have crafted practice guidelines to outline core procedural sedation principles and to address specialty-specific needs, challenges, and patient populations. However, a limitation of existing guidelines has been their primary emphasis on issues and practices germane to scheduled, elective sedation encounters. Many patients in various clinical settings regularly require unscheduled procedural sedation on short notice to facilitate urgent or emergent procedures, for which many aspects of patient management must differ from elective procedural sedation.[1-30] To better address the needs of time-sensitive, unscheduled procedural sedation, ACEP has organized a multidisciplinary effort to create a clinical practice guideline specific to unscheduled procedural sedation regardless of location or patient age.

WHY DOES UNSCHEDULED SEDATION REQUIRE A SEPARATE GUIDELINE?

To provide patient care that is safe, effective, and patient-centered, some procedures require urgent or emergent sedation and cannot be scheduled or delayed. Unique aspects of unscheduled sedation include:

- For urgent and emergent procedures, the sedation provider must manage not just the sedation encounter, but also the acute pain, anxiety, and associated circumstances of the precipitating injury or illness.
- Fasting may not be an option for time-sensitive procedures.
- Unscheduled procedures must often be performed while a patient is in a dynamic physiological state or prior to a definitive diagnosis.
- The goals and requirements for unscheduled procedural sedation can differ from elective procedural sedation, and some practices specific to the latter may unnecessarily complicate or delay preparations for the former to the detriment of patient comfort and care.
- Existing regulatory and accreditation standards focus primarily on elective procedural sedation, and extrapolation to unscheduled, time-sensitive procedures can confuse and impede patient care.

METHODS

Given the identified need, ACEP organized the effort to produce this consensus guideline.

Literature search: This guideline is based on critical analysis of the existing literature. Our medical librarian performed searches of the MEDLINE and Scopus databases. We limited all searches to human studies from English-language sources published between January 1, 2000 and August 10, 2018. Key words/phrases for literature searches: sedation, unscheduled sedation, procedural sedation, conscious sedation, dissociative sedation, dissociative anesthetics, presedation, urgent, emergent, emergency medicine, pediatric emergency medicine, ketamine, skill set, professional skills, privileging, credentialing, support personnel, equipment, supplies, patient evaluation, oral intake,

adjunctive, regimen, supplemental oxygen, recovery, and variations and combinations of the key words/phrases. We screened titles and abstracts of all articles identified by the search, with full text review of reports pertinent to the guideline. We reviewed the reference lists of identified publications and consulted with content experts to identify additional reports.

Writing committee: ACEP commissioned a writing committee of three general emergency physicians and two pediatric emergency physicians—each of whom had extensive experience with procedural sedation practice, research and/or policy management, extensive familiarity in the related literature, and no financial conflicts of interest.

Multidisciplinary review: We identified specialties other than emergency medicine that also regularly administer unscheduled procedural sedation (FIGURE 1), and invited them to appoint a representative to critically review and provide input on serial iterations of the document. To ensure optimal perspective, we asked that these representatives be practicing members of their primary specialty with regular clinical exposure to unscheduled procedural sedation, and to be free from relevant conflicts of interest (disclosures shown in the APPENDIX).

The writing group and organizational representatives met in Dallas, TX on June 21, 2018 to debate and edit the draft. Further refinement occurred during subsequent review cycles.

DEFINITIONS

We adopted this previously published[4] and cited[8-10] definition of **procedural sedation**: "the use of anxiolytic, sedative, hypnotic, analgesic, and/or dissociative medication(s) to attenuate anxiety, pain, and/or motion. These agents are administered in order to facilitate amnesia or decreased awareness and/or patient comfort and safety during a diagnostic or therapeutic procedure."[4]

We adopted definitions for **levels of procedural sedation** as shown in FIGURE 2, listed in increasing order of complexity and potential risk. Any administration of sedative drugs for which apnea is the desired endpoint is general anesthesia and not sedation, and is beyond the scope of this guideline.

Procedural sedation can be unscheduled or elective. We define **unscheduled** procedures as medical, surgical, or dental interventions that are emergent or urgent and, to optimize patient outcomes, must be performed within a short time frame unsuitable for that used to schedule elective procedures.

Examples of unscheduled procedures that can be time-sensitive (whether urgent and emergent) include, but are not limited to: cardioversion, tube thoracostomy, central venous line placement, imaging, fracture and dislocation reduction, cardiac catheterization, upper endoscopy, arthrocentesis, abscess incision and drainage, lumbar puncture, laceration repair, care of contaminated wounds, and foreign body removal.

We adopted the previously published[9] and cited[10] definition of a procedural sedation-related **adverse event**, as an "unexpected and undesirable response(s) to medication(s) and medical intervention used to facilitate procedural sedation and analgesia that threaten or cause patient injury or discomfort."[9]

We defined procedural sedation **rescue** as one or more interventions to correct adverse physiologic consequences from procedural sedation. Although the word "rescue" suggests an alarming situation, its interventions may occur in response to adverse events presenting either low or high risk.

SCOPE OF GUIDELINE

This document provides guidance for practitioners of unscheduled, time-sensitive procedural sedation, as defined above. We did not seek to address scheduled elective procedural sedation, the administration of analgesics to achieve analgesia or sedatives to achieve anxiolysis or sedation in the absence of a concurrent procedure, and minimal sedation (FIGURE 2) given its negligible patient risk.

We intend this guideline to be applicable to the practice of all emergency providers, and have incorporated multidisciplinary input in the belief that it will be useful to other practitioners of unscheduled procedural sedation.

GUIDING PRINCIPLES

The principal difference between this guideline and its predecessors is the focus on the special needs and issues relating to unscheduled procedural sedation. Other guiding principles are:

Evidence-based guideline components: We sought to be parsimonious—emphasizing what is known to be important, and omitting or deemphasizing that which is not.

Patient- and family-centered care: Given their importance, we have prioritized patient-centered and family-centered care more strongly than prior guidelines. The ethical imperative to diminish pain, alleviate anxiety, and optimize patient comfort during unscheduled procedures may be even greater given the added stress of the precipitating acute condition.

Time is of the essence for urgent and emergent procedures—not just to minimize physical harm from the active condition, but to minimize distress for the patient and their family. Delaying procedural sedation for reasons not supported by evidence[23-31] may result in extended periods of unremitting pain and anxiety with a negligible decrease in risk and must be avoided.

All sedation states: To accommodate the wide range of unscheduled procedures for which sedation is required and to maximize the applicability and usefulness of this guide, we discuss all states of sedation beyond minimal sedation. (Some guidelines omit deep[42] or dissociative[32,42] sedation.) With the exception of dissociative sedation with ketamine, sedation exists as a continuum, and patients will move up and down the sedation continuum and can transition between defined sedation states during any given procedure.[3,4,15,22] Dissociative sedation has particular utility for urgent or emergent procedures, especially in children, non-fasting patients, and those with co-morbid conditions.[5]

Multidisciplinary field: Procedural sedation (whether elective or unscheduled) has always been administered by providers of different backgrounds working in diverse settings. This multispecialty experience fosters productive debate and innovation.

Accordingly, it is appropriate that institutional oversight of procedural sedation practice be collaborative and multidisciplinary, usually in the form of a local procedural sedation committee. A single individual may chair such a committee; however, all procedural sedation providers should have sufficient and diverse representation in this process such that sound, evidence-based procedural sedation advances receive full and appropriate consideration. When unmet procedural sedation needs are identified, the collaborative multidisciplinary leadership should assist with forming strategies for their solution.[43-45] Procedural sedation leadership crosses multiple specialties with the demonstrated

skills and commitment to safely.[14,43-46]

Ventilatory adequacy versus responsiveness: When the first procedural sedation guidelines appeared in 1985,[47,48] pulse oximetry and capnography were unavailable in the outpatient setting, and physiologic monitoring was limited to cardiac rhythm and vital signs. Sedation levels were defined by the patient's response to verbal or tactile stimulation, with ventilatory quality descriptors secondary (FIGURE 2).

This responsiveness-based taxonomy is valuable for targeting procedural sedation depth to ensure patient comfort but should not be promoted as the principal metric of sedation safety. Responsiveness is itself not a clinically useful safety measure, but rather represents a crude and indirect surrogate for ventilatory adequacy.[49,50] Furthermore, responsiveness is an imprecise measure of procedural stress and subsequent procedural recall.[51,52] A consequence of this focus is that procedural sedation providers and monitors feel compelled to repeatedly stimulate their patients to re-verify their targeted sedation level—with such disturbances fundamentally counterproductive to the intended state of tranquility. An additional adverse consequence of this taxonomy is that, given the inherent subjectivity of these definitions, their incorporation into guidelines and policy has fomented semantic disputes regarding procedural sedation boundaries, eg, what is the dividing line between moderate and deep sedation, and between deep sedation and general anesthesia?[44-46,49,50,53]

Modern procedural sedation practice is best served by focusing on patient responsiveness when the intent is to ensure effectiveness,[54] while focusing on ventilatory adequacy when the intent is to ensure safety[49,50]–with both assessments occurring concurrently throughout the procedural sedation encounter. Cardiovascular stability is of similarly vital concern; however clinically important hemodynamic alterations are rare in patients without serious systemic disease or acute cardiovascular compromise. If a sedated patient has a stable and effective ventilatory pattern, from a safety perspective it is functionally irrelevant whether at that moment they are responsive to voice or to pain. Such ventilatory adequacy is verified through close, continual observation of the airway and chest wall motion, supplemented with physiologic monitoring of oxygenation (pulse oximetry) and ventilation (capnography). This safety focus is compared to the traditional effectiveness focus in FIGURE 2.

Given continued advances in ventilatory monitoring technology and real-time computational data analysis and algorithm development, it seems highly likely that responsiveness-defined sedation levels will be replaced in many procedures with objective physiological monitoring that continually predicts the ongoing risk of serious ventilatory impairment.[49,50,55]

Procedural sedation depth, not drug: A longstanding hallmark of procedural sedation guidelines is the concept of a sedation continuum, ie, that all sedatives and opioids, excluding ketamine—depending upon dose and patient response—are capable of producing any sedation depth along this scale from minimal sedation to general anesthesia. Accordingly, it is more meaningful and useful to focus clinical decisions and management upon sedation depth and ventilatory adequacy rather than the specific drug itself, recognizing that different drugs have different pharmacological properties and windows of effect and side effect. There is no evidentiary or pharmacological basis[1-6,12-15,32,36-40,44-46] for the designation of specific procedural sedation agents as intended or not intended for general anesthesia, or for restricting them on this basis.[42]

Skill sets, not specialty: A vital role for a procedural sedation guideline is to specifically outline the skill sets that render practitioners competent and suitable for procedural sedation privileges.[56]

Given ample evidence that modern procedural sedation is widely and safely practiced by a variety of specialists, competencies and privileges for procedural sedation should not be defined solely by specialty training. Instead, they should focus on whether the provider possesses specific procedural sedation knowledge in addition to assessment, management, and rescue skills targeted to sedation needs, the procedure, and the individual patient (FIGURE 3).[56] Providers may acquire and demonstrate procedural sedation competency as part of the curricula of their specialty training programs. Alternatively, providers may acquire and demonstrate procedural sedation competency through additional focused training and education.[56] All sedation practitioners must maintain their skills over time.

Intervention-oriented definitions for adverse events: An important advance in the evaluation of procedural sedation adverse events for quality improvement and for research is the shift away from event and threshold-based definitions (eg, apnea for >30 s) to the more clinically relevant intervention-based orientation (eg, assisted ventilation for apnea).[8,10] The act of performing an intervention is typically unambiguous, and thus more likely to be reported in a standardized, reproducible fashion. Intervention-based definitions better predict clinical importance, as any event would be trivial if no intervention was performed in response to its occurrence.[8,10] Periodic interventions are an expected part of procedural sedation practice, and their performance does not necessarily signify a clinical error.

Modern procedural sedation is off-label: Current product labeling from the United States Food and Drug Administration (FDA) is incomplete and inconsistent with the extensive procedural sedation literature.[46] As a result, essentially all medications used in modern procedural sedation practice are off-label, while simultaneously being highly safe and effective when used by those with proper training and support.[1-41] Unless and until there is a comprehensive update of FDA product labeling to comply with recent decades of procedural sedation advances, such product labeling should not supersede the wealth of evidence from the procedural sedation-specific medical literature.[1-7,12,13,15,31-33,35-41,45,46,51-53]

SEDATION STAFFING

Two-person sedation team: Safe procedural sedation requires a minimum of two trained health care practitioners at the bedside: the sedation provider who takes responsibility for oversight of the procedural sedation encounter and a sedation monitor (commonly a registered nurse or respiratory therapist) whose primary duty is continuous patient monitoring and documentation. Requisite skill sets for each role are shown in FIGURE 3.

At least one individual present must be skilled in vascular access.

Procedural sedation provider skill set: The sedation provider is a licensed health care professional with the sedation provider skill set (FIGURE 3). The procedural sedation provider must possess these core skills regardless of targeted sedation depth. Rescue skills are essential, given that it is not always possible to predict how an individual patient will respond. Procedural sedation providers must also possess the skills to identify a patient who is beyond the intended target depth, and to be prepared to correct any adverse physiologic consequences and return the patient to the originally intended level of sedation. Likewise, procedural sedation providers must recognize inadequate sedation and address the insufficient condition through administration of either more sedative or an alternative agent to achieve the optimal state while maintaining patient safety.

Emergency physicians have long-standing, proven procedural sedation skills and a track record as research leaders in this multidisciplinary field. The Centers for Medicare & Medicaid Services (CMS) acknowledged the special situation and training of emergency medicine: "The ED is a unique environment where patients present on an unscheduled basis with often very complex problems that may require several emergent or urgent interventions to proceed simultaneously to prevent further morbidity or mortality."[57] They continue: "… emergency medicine–trained physicians have very specific skill sets to manage airways and ventilation that is necessary to provide patient rescue. Therefore, these practitioners are uniquely qualified to provide all levels of analgesia/sedation."[57]

Although short courses such as Advanced Cardiac Life Support and Pediatric Advanced Life Support have educational merit, their completion does not assure appropriate sedation provider skills (FIGURE 3), and for some specialists—including emergency medicine and critical care—their residency or fellowship training offers a higher level of knowledge and skill acquisition than these courses and supersedes them.[58] ACEP is a member of the Coalition to Oppose Medical Merit Badges,[59] comprised of all major emergency medicine organizations. These organizations oppose credentialing or privileging based on brief, episodic courses for physicians who are already maintaining certification by the American Board of Emergency Medicine and the American Osteopathic Board of Emergency Medicine, as such maintenance of certification goes well beyond short courses designed to be taken by paramedics, nurses, and other providers.[58,59] For other specialties, periodic short courses may be a helpful component of training and skills maintenance.

Airway repositioning and bag mask ventilation are the most common airway rescue interventions,[11-13,36,40] even for emergency physicians and critical care physicians whose core training and practice includes intubation. For procedural sedation providers who do not intubate or place laryngeal mask airways regularly, it is preferable to focus their rescue skills on airway repositioning, bag mask ventilation, and the placement of oral and nasal airways rather than to stipulate intubation or laryngeal mask airway skills.[32]

Procedural sedation monitor skill set: The sedation monitor is a licensed health care professional (commonly a registered nurse or respiratory therapist) with the sedation monitoring skills shown in FIGURE 3, and whose principal role is continuous monitoring and documentation. The sedation monitor can assist with minor, interruptible tasks as long as they do not materially interfere with effective procedural sedation monitoring. If suitably trained, such tasks may include sedative drug administration under the direct supervision of the sedation provider.

Procedural sedation provider privileging and credentialing: Competencies for procedural sedation should be defined by the specific sedation skill set a practitioner must be able to perform, rather than by specialty training (FIGURE 3).[56] The granting of procedural sedation credentials and privileges can be comprehensive or focused.

Comprehensive procedural sedation privileges include all levels of sedation, including general anesthesia limited to emergency rapid sequence intubation and post-intubation management. Some providers will already possess comprehensive procedural sedation skills by virtue of their postgraduate training and ongoing clinical practice sufficient to support continued competence. For example, the core curricula of emergency medicine, pediatric emergency medicine, and critical care residency and fellowship programs accredited by the Accreditation Council for Graduate Medical Education and American Osteopathic Association include advanced airway management, resuscitation, critical care, vascular access, monitoring, pharmacology, pain management, and training and supervised practice in all levels of procedural sedation. Graduates of these programs are

routinely credentialed for rapid sequence intubation based upon this training and should, in essentially all cases, be simultaneously credentialed to manage all levels of procedural sedation.

Focused procedural sedation privileges are appropriate when a sedation provider possesses the skill set (FIGURE 3), but in accordance with his or her specific practice needs chooses to implement them in a manner restricted by sedation level or drug. One physician, for example, may be fully trained for moderate but not deep or dissociative sedation. In this case his or her procedural sedation skill set may appropriately be limited to the knowledge and skills pertinent to moderate sedation, ensuring that they possess rescue skills (FIGURE 3) and have no intent to perform dissociative or deep sedation. Another physician, for example, may be fully trained in moderate and deep sedation, but have never used ketamine nor feel any need to ever administer this agent. In this case, his or her procedural sedation skill set may appropriately omit the knowledge and skills unique to dissociative sedation.

Department medical directors and/or hospital procedural sedation committees can specify focused procedural sedation privileges based upon an individualized evaluation of each provider's skills, experience, and competency. In some circumstances departmental training and/or proctoring can be used to confirm or expand privileges.

Procedural sedation provider quality improvement: As with every other aspect of medical practice, departmental leadership and/or hospital procedural sedation committees continually monitor ongoing competencies as part of a quality improvement process (discussed later). Renewal without additional action should be expected for those who regularly provide procedural sedation, have no deficiencies identified through this quality improvement, and demonstrate no other reason to question their ongoing skills. In all other cases departmental leadership and/or the hospital procedural sedation committee will evaluate the current status of each provider's skills and competency on an individualized basis. If appropriate, privileges for specific sedation levels may be withdrawn or withheld contingent upon focused training and/or proctoring.

Procedural sedation monitor privileging and credentialing: The capability for a nurse, respiratory therapist, or other health care professional to serve as a procedural sedation monitor is a privilege based upon local oversight, training, and verification of skills.

Procedural sedation roles: When unscheduled moderate or dissociative sedation is performed, the procedural sedation provider may also be the provider performing the procedure, assuming that the procedure can be immediately halted should an adverse event occur that requires urgent attention or resuscitation.[1-6]

Some procedural sedation guidelines specify that the sedation provider during deep sedation should be fully dedicated to sedation management and not involved in the procedure.[32,33,42] Although such a practice is optimal for both scheduled and unscheduled procedures, there is a longstanding track record of sedation providers (with standard back-up from their sedation monitors) simultaneously performing brief unscheduled procedures while managing moderate, dissociative, or deep sedation. This practice has been shown to be safe, without evidence of any increased frequency of clinically important adverse events or outcomes.[3,17-20,35-40]

There remain circumstances in which time-sensitive deep sedation is necessary, but resources do not permit the timely availability of a third provider or the operating room without risk of physical harm based on the underlying condition and/or undue exacerbation of pain or anxiety for the patient and their family. Examples include a patient who promptly requires a tube thoracostomy, central line

placement, cardioversion, or hip relocation. In these circumstances, the benefits outweigh the risks for the procedure and sedation to commence without delay, as assessed by the sedation provider—particularly when the procedure at hand can be readily interrupted. Should an adverse event require urgent attention or resuscitation, the sedation provider must be able to immediately halt the procedure and attend to the patient as appropriate. These circumstances also assume the rapid availability of additional licensed health care practitioners (eg, nurses, respiratory therapists) beyond the sedation provider and sedation monitor who can assist with rescue, as is typical in a hospital setting but may not be in a clinic or office.

Nurse administration of sedatives: Just as qualified registered nurses routinely administer sedatives and paralytics for intubation under direct supervision of an ordering provider, they are similarly qualified and capable of administering medications for procedural sedation while under the direct supervision of the ordering provider. Some state and nursing board regulations restrict (or are locally interpreted to restrict) such administration—but without supporting evidence. Nurses with the required skills to serve as sedation monitors (FIGURE 3) should be permitted to administer any and all medications used for unscheduled procedural sedation while under the direct supervision of the ordering provider, with the ordering provider specifying the dosing and administration.

PROCEDURAL SEDATION PRACTICE

Procedural sedation needs assessment: When clinical circumstances dictate the need for an unscheduled procedure, the sedation provider must first assess the specific circumstances of the situation. How urgent or emergent is the procedure? What depth of sedation will be needed to ensure patient comfort? What level of responsiveness on the sedation continuum (FIGURE 2) will be compatible with procedural success? What is the likely duration of the procedure? Are the key patient needs analgesia, anxiolysis, immobility, or some combination of the three? Is the patient at higher risk of adverse events based upon the pre-sedation patient evaluation (see full section below)? What level of ventilatory adequacy (FIGURE 2) is to be anticipated?

It may be possible that procedural sedation can be avoided, and that a high level of patient comfort can be attained through some combination of analgesics, local anesthesia, regional anesthesia, and non-pharmacological techniques (see section below). Conversely, if the patient is at high risk based upon their pre-sedation evaluation, consider the feasibility of referral for general anesthesia, while recognizing the delays required arranging an operating room, anesthesia services, and an operating surgeon or proceduralist.

The procedural sedation provider will discuss the sedation plan with the patient (and/or his or her parents or caregivers, as appropriate), including risks and benefits, using shared decision-making. Appropriate consent will be obtained in accordance with local policies. This process will of necessity be abbreviated for some urgent and emergent procedures.

Pre-sedation patient evaluation: Sedation providers should perform the following pre-sedation evaluation, which will at times require abbreviation based upon the urgent or emergent nature of the required procedure.

The procedural sedation provider should perform a focused history and physical examination, including a review of current medications. Does the patient have substantial underlying illness? Patients who are healthy or have mild systemic disease (commonly classified as American Society of Anesthesiologists (ASA) physical status I and II respectively) are generally excellent procedural

sedation candidates. Those with severe systemic disease (ASA III or greater) are at greater risk of adverse events.[21,22,31]

What have been the patient's prior experiences with procedural sedation or anesthesia? Have they experienced prior adverse events? Do they have any pertinent allergies? Do they have any absolute or relative contraindications to the specific sedatives being considered?

Does the patient have any anatomic or physiologic variants that put them at greater risk of airway or ventilatory compromise, or that might complicate assisted ventilation? Examples include: airway abnormalities (eg, micrognathia, macroglossia, laryngomalacia, tonsillar hypertrophy), short neck, severe obesity, a history of obstructive sleep apnea, very young age (such as infants under 3 months), and premature birth in an infant. There is no evidence that adding the Mallampati score to this general airway evaluation has any impact on clinical outcomes, and thus it cannot be recommended.[60-63] This score—a graded visual assessment of the pharynx and tonsils—poorly predicts both difficult bag mask ventilation[60] and endotracheal intubation,[60,61,64] is unreliably assessed,[62,65] and is frequently not obtainable in younger children who are unable to comply with the exam.[63]

Females of childbearing age should be questioned regarding the potential for pregnancy, although in urgent or emergent situations procedural sedation will likely need to proceed regardless. There is inadequate evidence to guide specific sedative agent selection in pregnancy.

Pre-sedation oral intake: The combination of vomiting and loss of airway protective reflexes is rare during procedural sedation, and resulting aspiration is extremely rare.[31] To date, only nine reports of aspiration-associated deaths have been reported in the post-1984 procedural sedation literature, of which eight were during upper gastrointestinal endoscopy. None of these occurred in children or in healthy adults.[66] Currently, there is no evidence that non-compliance with elective fasting guidelines increases the risk of aspiration or other adverse events.[23-31] Any concerns regarding aspiration vastly exceed the actual risk.[31,66-69]

Providers of unscheduled procedural sedation should assess the timing and nature of recent oral intake. The urgency of the procedure will dictate the necessity of providing sedation without delay, regardless of fasting status. For patients with established risk factors for aspiration (eg, serious underlying illness,[31,66] obstructive sleep apnea,[31] obesity,[70-73] age less than 12 months,[31] upper endoscopy as the procedure,[37,38,66,74,75] or bowel obstruction),[31] consider the risks versus benefits of delaying procedural sedation after recent ingestion of a substantial meal. When such a delay is not feasible, consider the use of dissociative sedation, as unlike other sedatives ketamine helps preserve protective airway reflexes,[5,32] and there have been no reported occurrences of aspiration (despite its association with vomiting and laryngospasm) in patients receiving this agent alone except in compromised neonates.[5,66]

Sedative regimens: Assuming that procedural sedation remains appropriate, the sedation provider will plan the sedative regimen based on the needs and considerations identified above. This must be customized to each patient, as no single sedative agent or combination of agents is ideal for every patient or procedure. A full discussion of drugs and administration strategies is beyond the scope of this guideline (examples can be found elsewhere).[4-7,12,15] Agents used for unscheduled procedural sedation include but are not limited to opioids, benzodiazepines, barbiturates, ketamine, propofol, dexmedetomidine, etomidate, and nitrous oxide. Strategies include single versus combined agents. Drug doses and drug concentrations should be confirmed right before administration and calculated on a mg/kg basis for children.

Room and supplies: Procedural sedation must be performed in an area with oxygen, suction, physiological monitoring equipment, resuscitation medications, and age- and size-appropriate equipment for airway and ventilatory rescue (eg, bag-valve mask, oral airway, nasal airway) and for intravenous access. When opioids or benzodiazepines are principal sedatives, their reversal agents should be readily available. Drugs to treat allergic reactions and recovery nausea and vomiting should be readily available.

The need for intravenous access is dependent on the medications, the dose, the route used, and risk factors for adverse events. Ketamine, for example, can be safely administered intramuscularly without need for intravenous access.[5] Inhaled nitrous oxide and intranasal medications can be safely administered without intravenous access.

Non-pharmacological and other adjunctive techniques: Age-specific interventions for managing fear and pain can often reduce anxiety and distress in children and their families, and augment the procedural sedation experience.[76,77] The sedation provider should utilize developmentally appropriate interventions to reduce fear, anxiety and pain and, when available, enlist child life specialists specifically trained to provide this service. Immobilization devices in children should generally be avoided and should certainly not be used in lieu of non-pharmacological interventions as described above and, when appropriate, effective pharmacologic sedation.

Interactive monitoring: The sedation monitor must continually observe the quality of airway patency and ventilation, as noted in their specific skill set (FIGURE 3). The sedation provider must similarly observe the patient in an intermittent or continual fashion as per their specific skill set (FIGURE 3), and continually monitor sedation status to ensure patient comfort and to avoid oversedation.

The procedural sedation team should actively verify the procedure to be performed, the patient identity, and, when appropriate and when the proceduralist has not been in constant attendance with the patient, mark the correct anatomic site for the procedure. This “time-out” (as per The Joint Commission)[34] should not delay care in a life-threatening situation.

Physiologic monitoring: The sedation monitor will observe and periodically document the output of physiologic monitors. The use of these devices has become routine during procedural sedation, although it must be acknowledged there is little or no convincing evidence that they specifically enhance clinically important outcomes beyond interactive monitoring.[1-4,16] But given their simplicity, theoretical basis of utility, the reassurance they provide to caregivers, and their low added expense, cardiac monitoring, blood pressure assessment, and pulse oximetry should be used routinely during procedural sedation.

Cardiac monitoring permits the immediate continuous assessment of heart rate and rhythm. Clinically important bradycardia and other arrhythmias are extremely rare during procedural sedation but can be promptly identified with cardiac monitoring.

Blood pressure should be assessed at appropriate intervals including—if possible and not unduly disturbing to the patient—before, during, and after procedural sedation, and at the earliest evidence of potential cardiovascular compromise. Clinically important hypotension is rare during procedural sedation in patients without serious systemic disease or acute cardiovascular compromise. Greater attention and more frequent blood pressure measurements should occur in patients with serious underlying illness, and in those otherwise judged at higher risk. Patients with known or possible

volume depletion should be rehydrated at the earliest time that is safe and feasible—prior to sedative drug administration whenever possible—and their blood pressure frequently monitored.

Pulse oximetry permits immediate identification of downward trends in oxygen saturation, and must be continuously monitored.

Capnography is now routine in most settings for deep sedation but is optional for moderate or dissociative sedation. Capnography provides continuous, immediate, objective verification of the quality of ventilation, and is more reliable for this purpose than pulse oximetry or interactive monitoring alone.[16] Capnography is simple, noninvasive, easy to interpret, provides the earliest warning of hypoventilation and apnea, and its use can reduce the risk of developing hypoxia.[2,3,16,55] Normal capnography can quickly and unambiguously confirm ventilatory activity. Abnormal capnography can signal clinicians to reevaluate their patients, to be prepared to provide ventilatory support and/or to administer a reversal agent, and to avoid administering additional doses of sedatives until the concern is resolved.[55] Capnography also permits clinicians to safely administer supplemental oxygen (discussed below).

A limitation of physiologic monitoring is that anxious or frightened children and uncooperative adults may be unable to tolerate the blood pressure cuff, pulse oximetry sensor probe, or capnography cannula prior to procedural sedation. In these circumstances procedural sedation may need to be initiated without one or more of these monitoring modalities. Once the patient is sufficiently sedated the devices may then be fitted.[32] At lower levels of sedation uncooperative patients may not be able to tolerate a capnography cannula, and continual capnography may not be feasible.

Given the absence of supporting evidence, the use of a precordial stethoscope[32] during procedural sedation is optional.

Supplemental oxygen: In the event of apnea, high-flow pre-oxygenation delays oxygen desaturation by up to 6 minutes in a healthy adult and 2 to 4 minutes in a healthy child with a patent airway.[78] Such hyperoxygenation can permit patients to safely tolerate short periods of respiratory depression or apnea without need for positive-pressure-assisted ventilation and its potential for gastric insufflation. Clinicians can instead closely monitor the patient and avoid further drug administration.[79] Supplemental oxygen is commonly avoided when capnography is not used, thus permitting pulse oximetry to provide warning should interactive monitoring fail to detect ventilatory compromise. When using capnography to directly measure ventilatory status, high-flow supplemental oxygen can be administered throughout procedural sedation. In these situations, capnography can provide immediate evidence of apnea or hypopnea, and when respiratory effort has returned or is strengthening.

Rescue: The procedural sedation provider must be prepared to perform rescue interventions, according to their skill set (FIGURE 3), should the situation warrant, with efforts made to avoid positive pressure ventilation (and potential gastric insufflation) unless necessary. The procedural sedation team should recognize that ventilatory depression may occur shortly after a stimulating procedure has ceased, and the patient then becomes relaxed as the pain abates.

Recovery: Patients should be monitored post-sedation until they are no longer at risk for respiratory depression, their vital signs return to pre-sedation states, and they are alert and at age-appropriate baseline level of consciousness.[3,4,15] There is no need to establish a willingness or ability to take oral

liquids. If the patient is being discharged post-recovery, appropriate written care instructions should be given to the patient and their family or caregivers.

Documentation: The urgency of the procedure may not permit pre-sedation charting, but post-procedure the sedation provider must document the original procedural sedation plan; patient evaluation; procedural sedation course; drugs, drug doses, and when given; and any adverse events and their interventions. The sedation monitor will separately document sedation events and serial assessments of interactive and physiologic monitoring. This documentation must be sufficient to permit quality assurance reviews (discussed next).

QUALITY IMPROVEMENT

Each procedural sedation provider should be accountable to an organized quality assurance and improvement program (eg, departmental, institution-wide) that monitors procedural sedation practice, tracks adverse events, ensures satisfactory documentation and compliance with this guideline or local protocols, and identifies opportunities for improvement.

An example of a standardized tool for this purpose is TROOPS (Tracking and Reporting Outcomes Of Procedural Sedation, http://proceduralsedation.org/troops-overview),[10] which was developed through a rigorous multidisciplinary consensus process.

THE FUTURE

We pose key steps for future procedural sedation research and practice. First, as with this document, we believe that there should be greater collaboration between specialties in the development and oversight of optimal practice recommendations for this longstanding multidisciplinary field.[9,10,14,43-46]

Although the safety of procedural sedation practice by a variety of specialists is now well established, research should focus on patient-centered outcomes. How can we improve the quality of the experience for patients and their families? Can we increase satisfaction? Can we decrease the frequency and magnitude of procedural awareness? Without compromising safety or efficacy, are there ways in which the procedural sedation encounter can be accomplished more quickly or more cost-effectively?

Target-controlled infusion technology has yet to be rigorously studied in procedural sedation. Such computer-driven drug administration based upon pharmacokinetic modeling smooths out the peaks and troughs of sedative drug concentrations, and thus should diminish hypoventilation, help ensure more consistent patient comfort, and permit the sedation provider to more closely focus on the patient without the distraction of repeat bolus sedative drug administration.[80]

Future research should better define optimal procedural sedation strategies for patients who require time-sensitive procedural sedation despite substantial underlying illness, and for those who are pregnant.

Given the exceptionally low risk of pulmonary aspiration with procedural sedation and absent evidence of an impact from fasting, reform is appropriate for recommendations regarding pre-procedural oral intake.[23-31]

Regarding clinical practice, there should be a continued refocusing of sedation provider credentialing and privileging on specific pertinent skill sets as outlined in this guideline, and away from specialty training alone. Future research should better clarify the role of simulation in procedural sedation training. State-based nursing regulations should, where barriers exist, be amended to permit qualified nurses to administer any and all medications used for unscheduled procedural sedation while under the direct supervision of the ordering provider.

As noted earlier, the next few years will hopefully permit movement beyond our current responsiveness-based cognitive framework for the sedation continuum, and shift our focus from sedation depth to sedation risk.[49,50,55] The application of computational tools for analysis of continuous, high-resolution monitoring data may permit ongoing, real-time estimates of risk, allowing clinicians to titrate drug administration and focus interactive monitoring based upon such risk assessments rather than upon repeated patient stimulation.[49,50,55]

REFERENCES

1. American College of Emergency Physicians. Policy statement: procedural sedation in the emergency department. Available at https://www.acep.org/Clinical---Practice-Management. Accessed February 5, 2018.

2. Godwin SA, Burton JH, Gerardo CJ, et al. American College of Emergency Physicians. ACEP clinical policy: procedural sedation and analgesia in the emergency department. *Ann Emerg Med*. 2014;63:247-258.

3. O'Connor RE, Sama A, Burton JH, et al. American College of Emergency Physicians. Procedural sedation and analgesia in the emergency department: recommendations for physician credentialing, privileging, and practice. *Ann Emerg Med*. 2011;58:365–370.

4. Krauss B, Green SM, Procedural sedation and analgesia in children. *Lancet*. 2006;367:766-780.

5. Green SM, Roback MG, Kennedy RM, et al. Clinical practice guideline for emergency department ketamine dissociative sedation: 2011 update. *Ann Emerg Med*. 2011;57:449-461.

6. Atkinson P, French J, Nice CA. Procedural sedation and analgesia for adults in the emergency department. *BMJ*. 2014;348:g2965.

7. Miner JR, Burton JH. Clinical practice advisory: emergency department procedural sedation with Propofol. *Ann Emerg Med*. 2007;50:182-187.

8. Bhatt M, Kennedy RM, Osmond MH, et al. Consensus-based recommendations for standardizing terminology and reporting adverse events for emergency department procedural sedation and analgesia in children. *Ann Emerg Med*. 2009;53:426-435.

9. Mason KP, Green SM, Piacevoli Q, International Sedation Task Force. Adverse event reporting tool to standardize the reporting and tracking of adverse events during procedural sedation: a consensus document from the World SIVA International Sedation Task Force. *Br J Anaesth*. 2012;108:13–20.

10. Roback MG, Green SM, Andolfatto G, et al. Tracking and Reporting Outcomes of Procedural Sedation (TROOPS): standardized quality improvement and research tools from the International Committee for the Advancement of Procedural Sedation. *Br J Anaesth*. 2018;120:164-172.

11. Bellolio MF, Gilani WI, Barrionuevo P, et al. Incidence of adverse events in adults undergoing procedural sedation in the emergency department: a systematic review and meta-analysis. *Acad Emerg Med*. 2016;23:119–134.

12. Mallory MD, Baxter AL, Yanosky DJ, et al. Emergency physician–administered propofol sedation: a report on 25,433 sedations from the Pediatric Sedation Research Consortium. *Ann Emerg Med*. 2011;57:462-468.

13. Couloures KG, Beach M, Cravero JP, et al. Impact of provider specialty on pediatric procedural sedation complication rates. *Pediatrics*. 2011;127:e1154–1160.

14. Green SM, Roback MG, Krauss BS. The newest threat to emergency department procedural sedation. *Ann Emerg Med*. 2018:72:115-119.

15. Krauss B, Green SM. Sedation and analgesia for procedures in children. *N Engl J Med*. 2000;342:938-945.

16. Green SM, Pershad J. Should capnographic monitoring be standard practice during emergency department procedural sedation and analgesia? Pro and con. *Ann Emerg Med*. 2010;55:265–267.

17. Josephy CP, Vinson DR. Feasibility of single- vs two-physician procedural sedation in a small community emergency department. *Am J Emerg Med*. 2018;36:977–982.

18. Vinson DR, Hoehn CL. Sedation-assisted orthopedic reduction in emergency medicine: the safety and success of a one physician/one nurse model. *West J Emerg Med*. 2013;14:47-54.

19. Hogan K, Sacchetti A, Aman L, et al. The safety of single-physician procedural sedation in the emergency department. *Emerg Med J*. 2006;23:922-923.

20. Sacchetti A, Senula G, Strickland J, et al. Procedural sedation in the community emergency department: initial results of the ProSCED registry. *Acad Emerg Med*. 2007;14:41-46.
21. Caperell K, Pitetti R. Is higher ASA class associated with an increased incidence of adverse events during procedural sedation in a pediatric emergency department? *Pediatr Emerg Care*. 2009;25:661-664.

22. Miner JR, Martel ML, Meyer M, et al. Procedural sedation of critically ill patients in the emergency department. *Acad Emerg Med*. 2005;12:124-128.

23. Bhatt M, Johnson DW, Taljaard M, et al. Association of preprocedural fasting with outcomes of emergency department sedation in children. *JAMA Pediatr.* 2018;172:678-685.

24. Agrawal D, Manzi SF, Gupta R, et al. Preprocedural fasting state and adverse events in children undergoing procedural sedation and analgesia in a pediatric emergency department. *Ann Emerg Med*. 2003;42:636-646.

25. Roback MG, Bajaj L, Wathen JE, et al. Preprocedural fasting and adverse events in procedural sedation and analgesia in a pediatric emergency department: are they related? *Ann Emerg Med*. 2004;44:454-459.

26. Babl FE, Puspitadewi A, Barnett P, et al. Preprocedural fasting state and adverse events in children receiving nitrous oxide for procedural sedation and analgesia. *Pediatr Emerg Care*. 2005;21:736-743.

27. McKee MR, Sharieff GQ, Kanegaye JT, et al. Oral analgesia before pediatric ketamine sedation is not associated with an increased risk of emesis and other adverse events. *J Emerg Med*. 2008;35:23-28.

28. Bell A, Treston G, McNabb C, et al. Profiling adverse respiratory events and vomiting when using propofol for emergency department procedural sedation. *Emerg Med Australas*. 2007;19:405-410.

29. Chumpitazi CE, Camp EA, Bhamidipati DR, et al. Shortened preprocedural fasting in the pediatric emergency department. *Am J Emerg Med*. 2018; 36:1577-1580.

30. Green SM, Krauss BS, Mason KP. Reevaluating fasting for procedural sedation. *JAMA Pediatr*. 2018:172:622-623.

31. Beach ML, Cohen DM, Gallagher SM, et al. Major adverse events and relationship to nil per os status in pediatric sedation/anesthesia outside the operating room: a report of the Pediatric Sedation Research Consortium. *Anesthesiology*. 2016;124:80-88.

32. Coté CJ, Wilson S, American Academy of Pediatrics, American Academy of Pediatric Dentistry. Guidelines for monitoring and management of pediatric patients before, during, and after sedation for diagnostic and therapeutic procedures: update 2016. *Pediatrics*. 2016;pii:e20161212.

33. American Society of Anesthesiologists Task Force on Sedation and Analgesia by Non-Anesthesiologists. Practice guidelines for sedation and analgesia by non-anesthesiologists. *Anesthesiology*. 2002;96:1004-1017.

34. The Joint Commission. *2017 Hospital Accreditation Standards*. Oakbrook Terrace, IL: Joint Commission Resources; 2017.

35. Pinto RF, Bhimani M, Milne WK, et al. Procedural sedation and analgesia in rural and regional emergency departments. *Can J Rural Med*. 2013;18:130-136.

36. Rex DK, Deenadayalu VP, Eid E, et al. Endoscopist-directed administration of propofol: a worldwide safety experience. *Gastroenterology*. 2009;137:1229-1237.

37. Walker JA, McIntyre RD, Schleinitz PF, et al. Nurse-administered propofol sedation without anesthesia specialists in 9152 endoscopic cases in an ambulatory surgery center. *Am J Gastroenterol*. 2003;98:1744–50.

38. Tohda G, Higashi S, Wakahara S, et al. Propofol sedation during endoscopic procedures: safe and effective administration by registered nurses supervised by endoscopists. *Endoscopy*. 2006;38:360-367.

39. Rex DK, Heuss LT, Walker JA, et al. Trained registered nurses/endoscopy teams can administer propofol safely for endoscopy. *Gastroenterology*. 2005;129:1384-1391.

40. Behrens A, Kreuzmayr A, Manner H, et al. Acute sedation-associated complications in GI endoscopy (ProSed 2 Study): results from the prospective multicentre electronic registry of sedation-associated complications. *Gut*. In press.

41. Kezerashvili A, Fisher JD, DeLaney J, et al. Intravenous sedation for cardiac procedures can be administered safely and cost-effectively by non-anesthesia personnel. *J Interv Card Electrophysiol.* 2008;21:43–51.

42. American Society of Anesthesiologists. Practice guidelines for moderate procedural sedation and analgesia 2018: a report by the American Society of Anesthesiologists Task Force on Moderate Procedural Sedation and Analgesia, the American Association of Oral and Maxillofacial Surgeons, American College of Radiology, American Dental Association, American Society of Dentist Anesthesiologists, and Society of Interventional Radiology. *Anesthesiology*. 2018;128:437-479

43. International Committee for the Advancement of Procedural Sedation. Policy statement: preference for "sedation provider" over "non-anesthesiologists" in sedation guidelines and documents, adopted September 17, 2016. Available at: http://proceduralsedation.org/statements. Accessed February 6, 2018.

44. Krauss B, Green SM. Training and credentialing in procedural sedation and analgesia in children: lessons from the United States model. *Pediatr Anesth*. 2008;18:30-35.

45. Green SM, Krauss B. Who owns deep sedation? *Ann Emerg Med*. 2011;57:470-474.

46. Green SM, Krauss B. Barriers to Propofol use in emergency medicine. *Ann Emerg Med*. 2008;52:392-398.

47. Anesthesia and sedation in the dental office. *JAMA*. 1985;254:1073-1076.

48. Guidelines for the elective use of conscious sedation, deep sedation, and general anesthesia in pediatric patients. Committee on drugs. Section on anesthesiology. *Pediatrics*. 1985;76:317-321.

49. Green SM, Mason KP. Stratification of sedation risk—a challenge to the sedation continuum. *Pediatr Anesth*. 2011;21:924-931.

50. Green SM, Mason KP. Reformulation of the sedation continuum. *JAMA*. 2010;303:876-877.

51. Miner JR, Bachman A, Kosman L, et al. Assessment of the onset and persistence of amnesia during procedural sedation with Propofol. *Acad Emerg Med*. 2005;12:491-496.

52. Miner JR, Moore JC, Plummer D, et al. Randomized clinical trial of the effect of supplemental opioids in procedural sedation with Propofol on serum catecholamines. *Acad Emerg Med*. 2013;20:330-337.

53. Miner JR, Huber D, Nichols S, et al. The effect of the assignment of a pre-sedation target level on

procedural sedation using Propofol. *J Emerg Med*. 2007;32:249-255.

54. Cravero JP, Askins N, Sriswasdi P, et al. Validation of the pediatric sedation state scale. *Pediatrics*. 2017;139:e20162897–10.

55. Krauss BS, Andolfatto G, Krauss BA, et al. Characteristics of and predictors for apnea and clinical interventions during procedural sedation. *Ann Emerg Med*. 2016;68:564-573.

56. International Committee for the Advancement of Procedural Sedation. Policy statement: defining sedation competencies using skill sets, adopted September 17, 2016. Available at: http://proceduralsedation.org/statements. Accessed February 6, 2018.

57. Centers for Medicare & Medicaid Services. State Operations Manual. Available at: https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/Internet-Only-Manuals-IOMs-Items/CMS1201984.html. Accessed January 23, 2018.

58. American College of Emergency Physicians. Policy statement: Use of short courses in emergency medicine as criteria for privileging or employment. Approved January 2016. Available at: https://www.acep.org/patient-care/policy-statements/use-of-short-courses-in-emergency-medicine-as-criteria-for-privileging-or-employment. Accessed February 15, 2018.

59. Coalition to Oppose Medical Merit Badges. Available at: https://www.acep.org/education/cme/continuing-education/coalition-to-oppose-medical-merit-badges. Accessed February 15, 2018.

60. Lee A, Fan LT, Gin T, et al. A systematic review (meta-analysis) of the accuracy of the Mallampati tests to predict the difficult airway. *Anesth Analg*. 2006:102:1867-1878.

61. Baker P. Assessment before airway management. *Anesthesiol Clin*. 2015;33:257-278.

62. Karkouti K, Rose DK, Ferris LE, et al. Inter-observer reliability of ten tests used for predicting difficult tracheal intubation. *Can J Anaesth*. 1996;43:554-559.

63. Iyer MS, Pitetti RD, Vitale M. Higher Mallampati scores are not associated with more adverse events during pediatric procedural sedation and analgesia. *West J Emerg Med*. 2018;19:430-436.

64. Ezri T, Warters RD, Szmuk P, et al. The incidence of class "zero" airway and the impact of Mallampati score, age, sex, and body mass index on prediction of laryngoscopy grade. *Anesth Analg*. 2001;93:1073-1075.

65. Tham EJ, Gildersleve CD, Sanders LD, et al. Effects of posture, phonation and observer on Mallampati classification. *Br J Aneasth*. 1992;68:32-38.

66. Green SM, Mason KP, Krauss BS. Pulmonary aspiration during procedural sedation: a comprehensive systematic review. *Br J Anaesth*. 2017;118:344-54.

67. Coté CJ. NPO after midnight for children—a reappraisal. *Anesthesiology*. 1990;72:589-592.

68. Green SM, Krauss B. Pulmonary aspiration risk during emergency department procedural

sedation—an examination of the role of fasting and sedation depth. *Acad Emerg Med*. 2002;9:35-42.

69. Green SM, Roback MG, Miner JR, et al. Fasting and emergency department procedural sedation and analgesia: a consensus-based clinical practice advisory. *Ann Emerg Med*. 2007;49:454-461.

70. Olsson GL, Hallen B, Hambraeus-Jonzon K. Aspiration during anaesthesia—a computer-aided study in 185,358 anaesthetics. *Acta Anaesthesiol Scand*. 1986;30:84–92.

71. Kluger MT, Short TG. Aspiration during anaesthesia: a review of 133 cases from the Australian Anaesthetic Incident Monitoring Study (AIMS). Anaesthesia. 1999;54:19-26.

72. Walker RW. Pulmonary aspiration in pediatric anesthetic practice in the UK: a prospective survey of specialist pediatric centers over a one-year period. *Paediatr Anaesth*. 2013;23:702–711.

73. Neelakanta G, Chikyarappa A. A review of patients with pulmonary aspiration of gastric contents during anesthesia reported to the Departmental Quality Assurance Committee. *J Clin Anesth*. 2006;18:102-107.

74. Friedrich K, Scholl SG, Beck S, et al. Respiratory complications in outpatient endoscopy with endoscopist-directed sedation. *J Gastrointestin Liver Dis*. 2014;23:255-259.

75. Agostoni M, Fanti L, Gemma M, et al. Adverse events during monitored anesthesia care for GI endoscopy: an 8-year experience. *Gastrointest Endosc*. 2011;74:266-275.

76. Krauss BS, Krauss BA, Green SM. Videos in clinical medicine. Managing procedural anxiety in children. *N Engl J Med*. 2016;374:e19.

77. Leroy PL, Costa LR, Emmanouil D, et al. Beyond the drugs: nonpharmacologic strategies to optimize procedural care in children. *Curr Opin Anaesthesiol*. 2016;29 Suppl 1:S1-13.

78. Green SM, Krauss B. Supplemental oxygen during propofol sedation: yes or no? *Ann Emerg Med*. 2008;52:9-10.

79. Green SM, Andolfatto G. Managing propofol-induced hypoventilation. *Ann Emerg Med*. 2015;65:57–60.

80. Green SM, Krauss BS. Target-controlled infusions could improve the safety and efficacy of emergency department propofol sedation. *Anesth Analg*. 2016;122:283–284.

FIGURE 1: Organizations involved in the development of this guideline

Organizations who participated and endorsed the guideline

- American College of Emergency Physicians
- American Academy of Emergency Medicine
- American Board of Emergency Medicine
- American College of Cardiology
- American College of Medical Toxicology
- American College of Osteopathic Emergency Physicians
- Association of Academic Chairs of Emergency Medicine
- Emergency Medicine Residents' Association
- Emergency Nurses Association
- Society for Academic Emergency Medicine
- Society for Pediatric Sedation

Organizations who participated and provided input

- American Academy of Pediatrics
- American Academy of Pediatrics Section on Critical Care
- American Academy of Pediatrics Section on Pediatric Emergency Medicine
- American Society for Gastrointestinal Endoscopy
- Council of Emergency Medicine Residency Directors
- American Association of Oral and Maxillofacial Surgeons
- Society of Critical Care Medicine
- Society of Interventional Radiology

Organizations who provided review comments

- American Association of Nurse Anesthetists

Eight other organizations representing general medicine, anesthesiology, dentistry, and gastroenterology were invited to participate, but either declined or did not respond.

FIGURE 2: Common sedation state definitions listed in increasing order of complexity and potential risk, together with their corresponding airway and ventilatory focus.

Responsiveness-Based Sedation State Definitions (best to guide sedation effectiveness)	Airway & Ventilatory Focus (best to assess safety)
Minimal sedation (anxiolysis) "A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination might be impaired, ventilatory and cardiovascular functions are unaffected."[34]	The airway and effective spontaneous ventilation are consistently maintained.
Moderate sedation "A drug-induced depression of consciousness during which patients respond purposefully to verbal commands, either alone or accompanied by light tactile stimulation. No interventions are required to maintain a patent airway, and spontaneous ventilation is adequate. Cardiovascular function is usually maintained."[34]	The airway and effective spontaneous ventilation are essentially always maintained.
Dissociative sedation "A trance-like cataleptic state induced by the dissociative drug ketamine characterized by profound analgesia and amnesia, with retention of protective airway reflexes, spontaneous respirations, and cardiopulmonary stability."[2-6]	The airway may require repositioning. Effective spontaneous ventilation is essentially always maintained.*
Deep sedation "A drug-induced depression of consciousness during which patients cannot be easily aroused but respond purposefully following repeated or painful stimulation. The ability to independently maintain ventilatory function may be impaired. Patients may require assistance in maintaining a patent airway and spontaneous ventilation may be inadequate. Cardiovascular function is usually maintained."[34]	The airway may require repositioning. The ventilatory pattern may be at times slowed or irregular, but effective spontaneous ventilation is usually maintained such that assisted ventilation or other interventions are typically not required.
General anesthesia "A drug-induced loss of consciousness during which patients are not arousable, even by painful stimulation. The ability to independently maintain ventilatory function is often impaired. Patients often require assistance in maintaining a patent airway, and positive pressure ventilation may be required because of depressed spontaneous ventilation or drug-induced depression of neuromuscular function. Cardiovascular function may be impaired."[34]	The airway and ventilatory pattern are often impaired, and patients often require assisted ventilation or other interventions.

*Transient respiratory depression and apnea have been reported 1 to 2 minutes after rapid IV administration, and for this reason IV ketamine is typically administered over at least 30 seconds.[5]

FIGURE 3: Requisite Skill Sets for Procedural Sedation

Safe procedural sedation requires a minimum of two licensed health care practitioners in attendance: the procedural sedation provider who takes responsibility for oversight of the procedural sedation encounter, and a procedural sedation monitor whose primary duty is continuous patient monitoring and documentation. Requisite skill sets for each role are shown below.

	Procedural Sedation Provider	Procedural Sedation Monitor
Cognitive skills	Must understand: • airway, respiratory, and cardiovascular physiology and pathophysiology • the function and interpretation of continuous monitoring of cardiac rhythm, pulse oximetry, and capnography • sedative and antagonist drug pharmacology, e.g., pharmacokinetics, pharmacodynamics, dosing, administration, contraindications, adverse event profiles • sedation adverse events and when intervention is appropriate • the principles of patient pre-sedation evaluation and factors which increase sedation risk • the procedure to be performed and how it might impact the sedation course or sedation risk	Must be familiar with: • airway, respiratory, and cardiovascular physiology and pathophysiology • the function and interpretation of continuous monitoring of cardiac rhythm, pulse oximetry, capnography, and blood pressure • the sedative drugs being used, including their dosing, administration, duration, and adverse event profiles • sedation adverse events and when intervention is appropriate • the equipment used during rescue, and where it is stored
Interactive monitoring skills	Must be able to: • monitor airway patency, identify airway obstruction, and identify and distinguish obstructive and central apnea • monitor ventilatory adequacy using continual observation of chest wall motion supplemented with pulse oximetry and capnography • monitor cardiovascular stability using physical assessment supplemented with cardiac rhythm and blood pressure monitoring • recognize when a patient is excessively or inadequately sedated	Must be able to: • monitor airway patency and identify partial or complete airway obstruction • monitor ventilatory adequacy using continual observation of the airway and chest wall motion supplemented with pulse oximetry and capnography • monitor cardiovascular stability using physical assessment supplemented with cardiac rhythm and blood pressure monitoring • recognize when a patient is excessively or inadequately sedated
Rescue skills	Must be able to: • relieve airway obstruction through appropriate application of head tilt, chin lift, or placement of nasal or oral airway • perform bag mask ventilation • manage a patient who is excessively sedated, with or without active intervention as appropriate • rapidly initiate resuscitative measures for hypoxia, apnea, laryngospasm, hypotension, bradycardia, anaphylaxis, seizure, or cardiac arrest • rapidly summon additional resuscitation assistance, if required	Must be able to: • assist the sedation provider in resuscitation • rapidly summon additional resuscitation assistance, if required

APPENDIX: Conflict of interest disclosures for guideline participants

Questions asked of participants:

- Employment: Please indicate the name of your employer and describe your position of employment, including the nature of the business of your employer, the position you hold and a description of your daily employment responsibilities.
- Leadership: Do you hold any positions of leadership in other organizations, chapters, commissions, groups, coalitions, agencies, and/or entities (e.g. board of director positions, committees and/or spokesperson roles)? If yes, please describe the position you hold, including a brief description of the nature and purposes of the organization or entity.
- Relationships: To the best of your knowledge, do you have any outside relationships with any person or entity from which ACEP obtains goods and services, or which provides services that compete with ACEP where such relationship involves: a) holding a position of responsibility; b) an equity interest (other than a less than 1% interest in a publicly traded company); c) any gift, gratuities, lodging, dining, or entertainment valued at more than $100? If yes, please explain:
- Financial interests: Do you have any financial interests or positions of responsibility in entities providing goods or services in support of the practice of emergency medicine (e.g. physician practice management company, billing company, physician placement company, book publisher, medical supply company, and/or a malpractice insurance company), other than owning less than a 1% interest in a publicly traded company? If yes, please explain.
- Other potential conflict: Do you have any other interest that may create a conflict with your fiduciary duty to ACEP or that may create the appearance of a conflict of interest?
- Health administration: Do you have any outside relationships with any healthplan, health insurance company, delegated payer, health insurance company administrative service organization, or health insurance company related philanthropic organization or entity where such relationship involves: a) holding any position of responsibility; b) an equity interest (other than a less than 1% interest in a publicly traded company); c) any stipend, contribution, gift, gratuities, lodging, dining, or entertainment valued at more than $100? If yes, please explain.

Corrie Chumpitazi, MD, MS

- Employment: Associate Professor, Department of Pediatrics, Section of Emergency Medicine, Baylor College of Medicine; Co-Chair, Sedation Oversight Committee, Texas Children's Hospital.
- Leadership: Chair, Society for Pediatric Sedation Provider Course.
- Relationships: Pfizer Independent Grants for Learning & Change for Sickle Cell education and quality improvement in collaboration with ACEP.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

John Fisher, MD

- Employment: Montefiore Medical Center/Albert Einstein College of Medicine; Director, CCEP Fellowship Program Cardiology Division Montefiore Medical Center.
- Leadership: Chair, Electrophysiology Council (Committee), American College of Cardiology (ACC).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Daniel Gesek, DMD
- Employment: Oral and Maxillofacial Surgeon.
- Leadership: President elect, Florida Society of Oral and Maxillofacial Surgeons, Past Chair of Committee on Anesthesia, American Association of Oral and Maxillofacial Surgeons, Past Chair Council on Dental Education and Licensure of the American Dental Association.
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Steven M. Green, MD
- Employment: Emergency Medicine Faculty, Loma Linda University; Deputy Editor, Annals of Emergency Medicine.
- Leadership: Co-Chair, International Committee for the Advancement of Procedural Sedation (ICAPS).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Benjamin F. Jackson, MD
- Employment: Associate Professor of Pediatric Emergency Medicine and Division Director of Procedural Sedation, Medical University of South Carolina.
- Leadership: Board Member, Society for Pediatric Sedation (SPS); Chair, Outreach Committee, Society for Pediatric Sedation (SPS).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Pradip Kamat, MD, MBA
- Employment: Associate Professor of Pediatrics, Emory University School of Medicine.
- Leadership: Board Member, Society for Pediatric Sedation (SPS); Board Member, World Federation of Pediatric Intensive Critical Care Societies (WFPICCS).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Terry Kowalenko, MD
- Employment: Chair and Professor of Emergency Medicine, Oakland University William Beaumont School of Medicine; Chair, Emergency Medicine, Beaumont Health.
- Leadership: President, American Board of Emergency Medicine (ABEM).
- Relationships: None.
- Financial interests: Wife works for Genentech and owns stock in Roche, Amgen, and Biogen.
- Other potential conflict: None.
- Health administration: None.

Baruch S. Krauss, MD, EdM
- Employment: Associate Professor of Pediatrics, Harvard Medical School; Attending Physician, Emergency Medicine, Boston Children's Hospital.
- Leadership: None.
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Brandon Lewis, DO, MBA
- Employment: Associate Clinical Professor, Emergency Medicine
  Texas A&M Health Science Center; Regional Vice President, US Acute Care Solutions.
- Leadership: Board Member, American College of Osteopathic Emergency Physicians (ACOEP); Vice President, Texas Osteopathic Medical Association (TOMA).
- Relationships: US Acute Care Solutions advertises in ACEP newsletters and at ACEP annual meeting.
- Financial interests: Physician owner of US Acute Care Solutions holding substantially less than 1% interest in company.
- Other potential conflict: None.
- Health administration: None.

James R Miner MD
- Employment: Chief of Emergency Medicine, Hennepin County Medical Center;
  Professor of Emergency Medicine, University of Minnesota.
- Leadership: Board Member, Minneapolis Medical Foundation; Senior Associate Editor, Academic Emergency Medicine.
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Lewis S. Nelson, MD
- Employment: Professor and Chair, Department of Emergency Medicine, Rutgers New Jersey Medical School.
- Leadership: Board Member, American Board of Emergency Medicine (ABEM); Board Member, Accreditation Council for Continuing Medical Education (ACCME).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Michele C. Papo, MD, MPH
- Employment: Medical Director, Pediatric Intensive Care Unit, Medical City Children's Hospital; President, PACANT PLLC-physician group.
- Leadership: President, Foundation for Pediatric Acute Care and Quality; Subcommittee Chair, Subcommittee for Pediatric Fundamental Critical Care Support, Society of Critical Care Medicine (SCCM).
- Relationships: None.

- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Donald Phillips, DO
- Employment: Self-employed emergency physician, Total Care ER, Complete Care ERs; EMS Medical Director, Parker County Hospital.
- Leadership: Board Member, American Osteopathic Board of Emergency Medicine (AOBEM).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Mark G. Roback, MD
- Employment: Professor of Pediatrics and Emergency Medicine, University of Minnesota; Director, Division of Emergency Medicine, University of Minnesota Masonic Children's Hospital.
- Leadership: None.
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Marion H. "Sonny" Ruff, Jr., DNP, RN, CEN
- Employment: Clinic Nurse Practitioner, TrustCare Medical Express; Emergency Nurse Practitioner, MS Advanced Practice Nursing, LLC.
- Leadership: President, Mississippi Emergency Nurses Association (ENA).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Daniel Runde, MD, MME
- Employment: Faculty and Assistant Residency Director, Department of Emergency Medicine, University of Iowa Hospitals and Clinics; Chapter Editor, Merck Manual.
- Leadership: Editorial Board Member, TheNNT.com; Content Contributor, MDCalc.com.
- Relationships: None.
- Financial interests: Receive approximately $300 annually to edit chapter on lightning and electricity related issues for Merck Manual.
- Other potential conflict: None.
- Health administration: None.

Thomas R Tobin, MD, MBA
- Employment: Chief Medical Officer, Colorado West Healthcare System, dba Community Hospital.
- Leadership: Board Member, American Academy of Emergency Medicine (AAEM).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Nathan Vafaie MD, MBA
- Employment: Resident, Baylor College of Medicine.
- Leadership: Vice-Speaker, Emergency Medicine Residents' Association (EMRA).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

John J. Vargo, MD, MPH
- Employment: Director, Endoscopic Research and Innovation, Department of Gastroenterology and Hepatology Digestive Disease and Surgery Institute, Cleveland Clinic.
- Leadership: President-Elect, American Society for Gastrointestinal Endoscopy (ASGE).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Eric M. Walser, MD
- Employment: Professor and Chair, Department of Radiology, The University of Texas Medical Branch at Galveston.
- Leadership: Chair, Safety Committee, Society of Interventional Radiology (SIR).
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

Donald M. Yealy, MD
- Employment: Professor and Chair, Emergency Medicine, University of Pittsburgh and University of Pittsburgh Medical Center.
- Leadership: Deputy Editor, Annals of Emergency Medicine.
- Relationships: None.
- Financial interests: None.
- Other potential conflict: None.
- Health administration: None.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2017

Unsolicited Medical Personnel Volunteering at Disaster Scenes

Revised October 2017

Reaffirmed October 2008

Originally approved June 2002

The American College of Emergency Physicians (ACEP) and the National Association of EMS Physicians (NAEMSP) believe an organized approach is needed for the utilization of unsolicited medical personnel who volunteer to respond to disaster scenes or mass casualty incidents. Volunteer medical resources must integrate with the responding jurisdiction's established incident command system (ICS).

To the end, ACEP and NAEMSP encourage its members to become affiliated with pre-established disaster response organizations. This includes becoming pre-registered as disaster response personnel through the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP), which is present in every state and provides for license verification, personnel notification, and rostering of response teams. Affiliation with an established response team increases the likelihood of being mobilized in large scale events and provides training, integration into the emergency response with the in the jurisdiction, and logistical support. Examples include Medical Reserve Corps (local and state resource), Disaster Medical Assistance Team (DMAT, federal resource), Urban Search and Rescue (FEMA), and others.

ACEP and NAEMSP generally discourage health care provider self-deployment to a disaster scene, believing that a medical provider's primary responsibility during a disaster or multi-casualty event is to respond to the facility or health system where he/she has staff privileges. An exception can occur when medical personnel are already present at a scene where an unanticipated incident occurs. These health care providers are encouraged to provide initial care as a Good Samaritan. Responding EMS and law enforcement will establish on-scene medical command and direct further scene coordination and care. Once ICS is established, responsibility of a volunteer medical provider will be determined by the incident commander based on the nature of the incident, skills of the provider, and other medical resources available.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Urgent Care Centers

Revised January 2022

Originally approved October 2016

An urgent care center is a walk-in clinic focused on the delivery of medical care for minor illnesses and injuries in an ambulatory medical facility outside of a traditional hospital-based or freestanding emergency department (ED). Other names for similar types of facilities include but are not limited to after hours walk-in clinics, minute clinics, quick care clinics, minor emergency centers, and minor care clinics. In some instances, facilities have used the term "emergency" in their name or advertisements, for example, "Minor Emergency Clinic" or "We Treat Emergencies."

Although the Urgent Care Association of America and the American Academy of Urgent Care Medicine have criteria for urgent care clinics, there are limited regulations or state licensing requirements.

The services provided at urgent care clinics across the country offer a wide range of care. Unlike EDs associated with a hospital, urgent care facilities do not have state or federal mandates to see, treat, or stabilize patients without regard for the patient's ability to pay.

The American College of Emergency Physicians (ACEP) believes that any facility that does not meet the definition of an ED or freestanding ED as defined by ACEP and that advertises itself as providing unscheduled care should:

- Not use the word "emergency" or "ER" in its name in any way.
- Not use the word "emergency" or "ER" in any advertisements, claims of service, or to describe the type or level of care provided or as an alternative to an ED. Doing so may be considered a deceptive trade practice, as defined by federal or applicable state law.
- Be required to comply with appropriate state or federal licensing requirements that specify staffing and equipment criteria to provide clear information to patients accessing medical care.

ACEP believes that urgent care centers do play a role in the provision of unscheduled care, but the lack of regulation has caused confusion for patients and puts patients at risk if they present to an urgent care center with a truly emergency medical condition that requires ED care. Therefore, ACEP

encourages all states to have regulations regarding urgent care centers and the use of the word "emergency" consistent with this policy and with input from ACEP chapters in the state.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Use of Antitussive Medications in the Pediatric Population

Originally approved February 2020

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) entitled, "Use of Antitussive Medications in Acute Cough in Young Patients"

Recognizing the lack of efficacy and risk of adverse events associated with antitussive medications in pediatric patients, the American College of Emergency Physicians (ACEP):

1. Does not support the utilization of over-the-counter or prescription single ingredient antitussive or fixed-combination ingredient cough and cold preparations in the treatment of pediatric patients.

2. Agrees with the American Academy of Pediatrics (AAP) that cough and cold medicines should not be prescribed or recommended for respiratory illness in young children.

3. Supports the Food and Drug Administration (FDA) warning that codeine should not be used to treat cough in children younger than 12 years due to the risk of serious side effects, including slowed or difficult breathing and death.

4. Supports the FDA recommendation that codeine is not recommended to treat cough in adolescents between 12 and 18 years who are obese or have conditions such as sleep apnea or severe lung disease that may increase the risk of breathing problems.

5. Discourages the use of dextromethorphan-containing cough medicines in pediatric patients due to risk of serious adverse effects and insufficient evidence for efficacy.

6. Discourages the use of benzonatate-containing cough medicines in pediatric patients due to the risk of serious adverse effects and the lack of research regarding efficacy in the pediatric population.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2021

Use of Droperidol in the Emergency Department

Originally approved
January 2021

The purpose of this policy statement is to reaffirm the safety and efficacy of droperidol for a variety of common conditions treated in emergency departments (EDs). Multiple studies show droperidol's superiority to a variety of other drugs for the following conditions: nausea, vomiting, headache, or undifferentiated agitation. Due to a black box warning along with subsequent drug shortage, use of droperidol was severely curtailed. However, with recent increased availability, along with recently published safety data, we believe that this unique drug should have its black box warning removed and be promoted for use in the ED when clinically indicated.

Droperidol is a butyrophenone with an approved indication for reducing the incidence of nausea and vomiting associated with surgical and diagnostic procedures (see package insert, American Reagent, 2019).[1] It has also been commonly used for control of chemotherapy-induced nausea and vomiting, treatment of migraine headaches, and sedation of agitated psychosis. Its side effects include sedation, extrapyramidal disorders (akathisia), orthostatic hypotension, and prolongation of QT in a dose-dependent fashion.

In 2001, the FDA released a black box warning describing the risk of QT prolongation and torsades de pointes.[2] The warning states that QT prolongation has occurred in patients without known risk factors and in some cases has been fatal. The warning goes on further to state that this drug should be reserved for use only when other acceptable treatments have not provided an adequate response and recommends that all patients have a 12-lead ECG prior to administration and if any QTc prolongation exists, to avoid droperidol. It also recommends that ECG monitoring continue for 2 to 3 hours post administration.[1] Because of this warning, many states and hospitals limited droperidol's use to low doses intramuscularly, or banned its use altogether, especially in the absence of concurrent cardiac monitoring or pre-administration electrocardiogram (EKG). Subsequently, and despite a lack of concern from clinicians, the black box warning abruptly curtailed the use of a safe and effective drug in US hospitals.[3]

Since the addition of the black box, the justification for its widespread application has been called into question. The FDA based its warning on 65 case reports submitted regarding adverse cardiac events from droperidol, the majority at extremely high doses (25 to 250 mg), higher than typically used in the US therapeutically.[4-6] At low doses, <2.5 mg, there were only 10 adverse cardiac-related events, and 2 deaths, all with confounding factors.[5,7] Furthermore, a review of the FDA's medical product safety reporting program for health professionals, MedWatch, from the time period 1997 to 2002 when use was widespread, revealed only 89 deaths, with a minority in the United States. Five of these deaths involved exposure to doses of ≤2.5 mg.[8] Eventually, the FDA conceded that the black box warning does not apply for doses of droperidol less than 2.5 mg.[9] Since that time, droperidol use has been studied in thousands of ED cases without any occurrence of fatal dysrhythmias, with dosing in many cases over 10 mg.[10,11]

Multiple trials published since the black box warning confirm the safety and potential superiority of low-dose droperidol for the treatment of nausea and vomiting in the ED.[12] A study of ED patients presenting with nausea, showed that droperidol (1.25 mg IV) reduced symptoms better than metoclopramide or prochlorperazine (change in nausea on 100 mm visual analog scale, –54.5 mm vs –40.2 mm vs –40.5 mm), with the only adverse effect being self-reported restlessness or anxiety at 24-hour follow-up (71% vs 25% vs 35%) with over 90% satisfaction regardless of group.[13] Another study indicated less emesis when compared to ondansetron in the first 2 hours postoperatively.[14] A more recent ED study showed no increase in restlessness or agitation with droperidol (1.25 mg IV) vs metoclopramide or ondansetron. Although underpowered, the study reported that patients who subjectively "achieved the desired effect" were statistically higher in the droperidol group than in the placebo group (77% vs 59%; ARR=18%; 95% CI 3 to 33%; NNT=5) and less rescue medication was required.[12] In a recent Cochrane review, the only antiemetic to show a significant decrease in nausea was droperidol.[15]

Droperidol has been used for many years for the safe treatment of headaches in the ED. Droperidol at 2.5 mg IV was found to be superior to prochlorperazine at 10 mg IV for migraine control.[16] Doses of IM droperidol up to 8.25 mg IM were superior to placebo for migraines without inducing any QT prolongation.[17] In benign headaches, droperidol was superior to prochlorperazine at a dose of 2.5 mg IV or 5 mg IM.[18] A 2011 systematic review of three studies by Leong and Kelly confirm that droperidol is more effective than opioids or prochlorperazine for headaches, without an increase in adverse events.[19]

Higher doses (≥10 mg) of droperidol have been used safely for acute undifferentiated agitation in ED patients. A randomized controlled trial from 2006 found droperidol and midazolam, both starting at doses of 5 mg IV and repeated as needed up to 20 mg, equally effective for sedation of acutely agitated patients without inducing dysrhythmias or QTc changes.[20] Another randomized control trial of droperidol, 5 mg IV, found it superior to midazolam or olanzapine for agitation, without inducing dysrhythmias.[21] When combined with midazolam, droperidol (5 to10 mg IV) was even more effective in controlling severe agitation and combativeness in acute psychosis, without prolongation of QTc or cardiac adverse events.[22] Similar conclusions were found in prehospital data, where doses of droperidol up to 5 mg IV or 10 mg IM were more effective and safer than alternative medications, such as midazolam.[23] In a prospective observational study of 1,009 ED patients with acute behavioral disturbance along with close cardiac monitoring, high dose droperidol 10 to 20 mg IV (median dose, 10 mg) resulted in QT prolongation in only 1.3% (95% CI 0.7% to 2.3%) of patients without any incidence of torsades de pointes.[24] A systematic review published in 2018 confirmed the safety and efficacy of droperidol for acute psychosis-induced agitation.[25] Intramuscular doses of up to 10 mg of droperidol appear to be as safe and possibly more effective than other medications used for control of agitated patients.[22,26] There were no reports of increased cardiac or respiratory events in all of these droperidol trials. Given these trials, it can be concluded that droperidol provides a consistent effective treatment for acute agitation in the ED, thereby improving patient and provider safety.

Based on the literature, droperidol is safe for the treatment of nausea, vomiting, headaches, and agitation in the ED and prehospital environments. The FDA agrees that current literature does not support mandating a prior electrocardiogram or telemetry monitoring for doses <2.5 mg given intravenously. There should be no restrictions for use of droperidol at higher doses in the ED provided cardiac monitoring is available soon after IV administration for high risk patients: age ≥65 years, female sex, hypokalemia, or concomitant QT prolongation medications.[27,28] For agitated psychosis, because of the extensive published literature and safety, we recommend that physicians and prehospital personnel continue to use droperidol at even higher doses, starting initially at 5-10 mg IM or IV given studied doses up to 20 mg, regardless of initial monitoring capability or EKG. We also recommend that the FDA block box warning be revised to reflect the newest data regarding the safety and efficacy of droperidol for a variety of ED indications.[29]

REFERENCES

1. Droperidol [package insert]. Shirley, NY. American Regent, Inc.; 2009. Available at: https://www.americanregent.com/media/1574/droperidol_prescribing-information.pdf. Accessed May 5, 2020.
2. Inapsine (droperidol) injection [package insert]. Decatur, IL. Taylor Pharmaceuticals.; 2001.
3. Jacoby JL, Fulton J, Cesta M, et al. After the black box warning: dramatic changes in ED use of droperidol. *Am J Emerg Med*. 2005;23:196.
4. Ludwin DB, Shafer SL. Con: The black box warning on droperidol should not be removed (but should be clarified!). *Anesth Analg*. 2008;106:1418-1420.
5. Habib AS, Gan T. Food and drug administration black box warning on the perioperative use of droperidol: a review of the cases. *Anesth Analg*. 2003;96:1377-1379.
6. van Zwieten K, Mullins ME, Jang T. Droperidol and the black box warning. *Ann Emerg Med*. 2004;43:139-40.
7. Jackson CW, Sheehan AH, Reddan JG. Evidence-based review of the black-box warning for droperidol. *Am J Health Syst Pharm*. 2007;64:1174-1186.
8. Mullins M, Van Zwieten K, Blunt JR. Unexpected cardiovascular deaths are rare with therapeutic doses of droperidol. *Am J Emerg Med*. 2004;22:27-28.
9. Rappaport BA. FDA response to droperidol black box warning editorials. *Anesth Analg*. 2008;106:1585.
10. Gaw CM, Cabrera D, Bellolio F, et al. Effectiveness and safety of droperidol in a United States emergency department. *Am J Emerg Med*. 2020;38:1310-1314.
11. Calver L, Page CB, Downes MA, et al. The safety and effectiveness of droperidol for sedation of acute behavioral disturbance in the emergency department. *Ann Emerg Med*. 2015;66:230-238.
12. Meek R, Mee MJ, Egerton-Warburton D, et al. Randomized placebo-controlled trial of droperidol and ondansetron for adult emergency department patients with nausea. *Acad Emerg Med*. 2019;26:867-877.
13. Braude D, Soliz T, Crandall C, et al. Antiemetics in the ED: a randomized controlled trial comparing 3 common agents. *Am J Emerg Med*. 2006;24:177-182.
14. Fortney JT, Gan TJ, Graczyk S, et al. A comparison of the efficacy, safety, and patient satisfaction of ondansetron versus droperidol as antiemetics for elective outpatient surgical procedures. S3A-409 and S3A-410 Study Groups. *Anesth Analg*. 1998;86:731-738.
15. Furyk JS, Meek RA, Egerton-Warburton D. Drugs for the treatment of nausea and vomiting in adults in the emergency department setting. *Cochrane Database Syst Rev*. 2015;9:CD010106.
16. Weaver CS, Jones JB, Chisholm CD, et al. Droperidol vs prochlorperazine for the treatment of acute headache. *J Emerg Med*. 2004;26:145–150.
17. Silberstein SD, Young WB, Mendizabal JE, Rothrock JF, Alam AS. Acute migraine treatment with droperidol: A randomized, double-blind, placebo-controlled trial. *Neurology*. 2003;60:315-21.
18. Miner JR, Fish SJ, Smith SW, et al. Droperidol vs. Prochlorperazine for Benign Headaches in the Emergency Department. *Acad Emerg Med*. 2001;8:873-879.

19. Leong LB, Kelly AM. Are butyrophenones effective for the treatment of primary headache in the emergency department? *CJEM*. 2011;13:96-104.
20. Knott JC, Taylor DM, Castle DJ. Randomized controlled trial comparing intravenous midazolam and droperidol for sedation of the acutely agitated patient in the emergency department. *Ann Emerg Med*. 2006;47:61-47.
21. Chan EW, Taylor DM, Knott JC, et al. Intravenous droperidol or olanzapine as an adjunct to midazolam for the acutely agitated patient: a multicenter, randomized, double-blind, placebo-controlled clinical trial. *Ann Emerg Med*. 2013;61:72-81.
22. Taylor D, Yap CYL, Knott JC, et al. Midazolam-droperidol, droperidol, or olanzapine for acute agitation: a randomized clinical trial. *Ann Emerg Med*. 2017;69:318-326.
23. Page CB, Parker LE, Rashford SJ, et al. A prospective before and after study of droperidol for prehospital acute behavioral disturbance. *Prehosp Emerg Care*. 2018; *22*:713-721.
24. Calver L, Page CB, Downes MA, et al. The safety and effectiveness of droperidol for sedation of acute behavioral disturbance in the emergency department. *Ann Emerg Med*. 2015;66:230-238.
25. Gottlieb, M, Schiebout J. What is the efficacy of droperidol for the management of acute psychosis-induced agitation? *Ann Emerg Med*. 2018;71:141-143.
26. Khokhar MA, Rathbone J. Droperidol for psychosis-induced aggression or agitation. Cochrane *Database Syst Rev*. 2016;12:CD002830.
27. Vandael E, Vandenberk B, Vandenberghe J, et al. Risk factors for QTc-prolongation: systematic review of the evidence. *Int J Clin Pharm*. 2017;39:16-25.
28. Nachimuthu S, Assar MD, Schussler JM. Drug-induced QT interval prolongation: mechanisms and clinical management. *Ther Adv Drug Saf*. 2012;3:241-253.
29. Faine B, Hogrefe C, Van Heukelom J, et al. Treating primary headaches in the ED: can droperidol regain its role? *Am J Emerg Med*. 2012; 30:1255-1262.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Use of High-Sensitivity Cardiac Troponin in the Emergency Department

Originally approved June 2022

As an adjunct to this policy statement, ACEP has prepared a policy resource and education paper (PREP) titled "Use of High-Sensitivity Cardiac Troponin in the Emergency Department"

The American College of Emergency Physicians (ACEP) endorses the following principles regarding the use of high sensitivity cardiac troponin (hs-cTn) in the evaluation and management of patients presenting to the emergency department with symptoms concerning for acute coronary syndrome (ACS):

- The use of hs-cTn allows for safe earlier disposition of patients presenting with symptoms concerning for ACS.
- A detectable hs-cTn level does not mean a patient is necessarily having an acute myocardial infarction (MI), as there are multiple other conditions that can result in a detectable hs-cTn level.
- In cases of low but detectable hs-cTn levels, serial hs-cTn testing can help exclude MI.
- Each hs-cTn assay has different analytic characteristics (Link to PREP) and their values cannot be compared interchangeably.
- A patient's history and hs-cTn result(s), in conjunction with a diagnostic algorithm (Link to PREP), are helpful to inform clinical decision making for patients who present with symptoms concerning for ACS.
- There is no one universally accepted clinical algorithm. Institutions should develop an algorithm tailored to their unique patient population (prevalence of ACS), practice environment, clinician risk tolerance, and the type of hs-cTn assay available.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Use of Medical Interpreters in the Emergency Department

Originally approved June 2022

The American College of Emergency Physicians (ACEP) supports the use of qualified medical interpreters for emergency department patient interactions with patients showing limited English proficiency. ACEP supports the following medical interpretation concepts:

- That professional or qualified interpreters be utilized whenever feasible and available during encounters with patients showing limited English proficiency or hearing impairment.
- That a modality of interpretation (eg, in-person, video, telephonic) be selected that best fits the clinical situation.
- That all patients requiring or requesting interpretation services be granted access to professional or qualified interpretation services unless an alternative preference is stated.
    - Friends, relatives, and other non-professional interpreters should only be used if the patient states a desire or preference for the stated individual(s).
- That ad-hoc interpretation be considered only for situations in which profession or qualified interpretation is either impractical or unavailable.
- That hospitals and departments identify a standardized yet time reasonable mechanism by which individuals, including emergency physicians, are or may be identified as qualified medical interpreters.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2017

Use of Nurse Implemented Order Sets

Reaffirmed January 2017

Approved June 2010

The American College of Emergency Physicians (ACEP) recognizes the practice of utilizing nurse implemented order sets. These sets are predetermined collections of departmental orders initiated based upon nursing assessment of the patient and are consistent with high-quality emergency care, enhanced patient safety and satisfaction.

It is the position of the College that the use of such order sets does not, in and of itself, create a physician-patient relationship.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Use of Patient Restraints

Revised February 2020, April 2014

Reaffirmed October 2007

Revised April 2001, June 2000, January 1996

Originally approved January 1991

The American College of Emergency Physicians (ACEP) supports the careful and appropriate use of patient restraints or seclusion.

The administration of restraints can be dangerous not only to patients but to the staff. Safety should always be of paramount concern and should be considered for the application of restraints for agitated patients. Staff should be appropriately trained for the safety of all patients.[1]

CMS defines restraints as "Any manual method, physical or mechanical device, material, or equipment that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely; or a drug or medication when it is used as a restriction to manage the patient's behavior or restrict the patient's freedom of movement and is not a standard treatment or dosage for the patient's condition."[1]

Restraints can be both physical and chemical. CMS explains that a medication constitutes a restraint if it is not considered "standard treatment" and if "the overall effect of a medication is to reduce the patient's ability to effectively or appropriately interact with the world around the patient."

Treatment for acute psychiatric conditions often includes medication that can also be used for medical restraints therefore the use of a specific medication does not by itself constitute a restraint.[1] Consider oral medications, if appropriate, prior to IM, IV routes of administration.

ACEP recognizes that patient restraint involves issues of civil rights and liberties, including the right to refuse care, freedom from imprisonment, and freedom of association. However, there are circumstances when the use of restraints is in the best interest of the patient, staff, or the public.

Patient restraint should be considered when a careful assessment establishes that the patient is a danger to self or others by virtue of a medical or psychiatric condition and when verbal de-escalation is not successful.

ACEP endorses the following principles regarding patient restraints:

- When appropriate and safe, verbal de-escalation and standard treatment of underlying medical or psychiatric conditions should be attempted before restraints.

- Restraint of patients should be individualized and employed in a manner that makes all reasonable attempts to maintain the patients' privacy and dignity.
- The method of restraint should be the least restrictive necessary for the protection of the patient and others.
- Staff should be properly trained in de-escalation, trauma informed care, the appropriate use and application of restraints and in the monitoring of patients in restraint and seclusion.
- Protocols to ensure patient safety should be developed to address observation and treatment during the period of restraint and periodic assessment as to the need and means of continuing or discontinuing restraint.
- The use of restraints should be carefully documented, including the reasons for and means of restraint, alternatives to restraint, and the periodic assessment of the restrained patient.
- ACEP opposes any requirement by hospital representatives or medical staff that emergency physicians provide inpatient restraint or seclusion orders. Patient restraint or seclusion requires comprehensive patient assessment, and the emergency physician's principal legal and ethical responsibility is to patients who present to be seen and treated in the emergency department.
- The use of restraints should conform to applicable laws, rules, regulations, and accreditation standards.

[1] Department of Health and Human Services, Centers for Medicare and Medicaid; Hospital Conditions of Participation: Patients' Rights; 42 CFR Part 482

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2019

Use of Peak Expiratory Flow Rate Monitoring for the Management of Asthma in Adults in the Emergency Department

Reaffirmed January 2019, June 2013

Revised October 2007

Originally approved June 2000

As an adjunct to this policy statement, ACEP has prepared a Policy Resource Education Paper (PREP) titled "Use of Peak Expiratory Flow Rate Monitoring for the Management of Asthma in Adults in the Emergency Department."

The American College of Emergency Physicians (ACEP) endorses the following principles regarding the use of peak expiratory flow rate (PEFR) monitoring in the emergency department management of adult patients who present for treatment of an acute exacerbation of asthma:

- Determination of PEFR can provide a quantitative measurement of airflow obstruction.
- PEFR monitoring may aid emergency physicians during their evaluation and management of a patient with an acute exacerbation of asthma.
- The use of PEFR monitoring during the emergency department evaluation and management of adult patients with acute exacerbations of asthma has not been shown to improve outcomes, reliably predict the need for admissions, or limit morbidity or mortality.
- The decision to perform PEFR as part of the emergency department management of a patient with an acute exacerbation of asthma should be individualized for each patient.
- There is insufficient evidence to require the use of PEFR monitoring in the emergency department evaluation of all adult patients seeking care for an acute exacerbation of asthma.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Use of Short Courses in Emergency Medicine as Criteria for Privileging or Employment

Revised January 2022,
January 2016,
April 2012

Reaffirmed September 2005

Revised June 1999 with current title, June 1997, August 1992

Originally approved January 1984 titled "Certification in Emergency Medicine"

The American College of Emergency Physicians (ACEP) believes that board certification by the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM) demonstrates comprehensive training, knowledge, and skill in the practice of emergency medicine. Although short course completion may serve as evidence of focused review, the topics covered in such courses are part of the core curriculum of emergency medicine. ABEM or AOBEM certification in emergency medicine supersedes evidence of completion of such courses. Additionally, maintenance of board certification requires mandatory retesting and continuing medical education (CME), making updated short courses redundant. Similarly, board certification and maintenance of certification by either ABEM or American Board of Pediatrics (ABP) in pediatric emergency medicine supersedes the need for completion of such short courses.

However, for physicians board eligible or board certified by ABEM or AOBEM in emergency medicine , ACEP strongly opposes requiring completion of courses such as Advanced Cardiac Life Support (ACLS), Advanced Trauma Life Support (ATLS), Pediatric Advanced Life Support (PALS), and Basic Trauma Life Support (BTLS), or a specified number of CME hours in a sub-area of emergency medicine, as conditions for privileges, renewal of privileges, employment, qualification by hospitals, government agencies, or any other credentialing organization's standards to provide care for designated disease entities. For physicians board eligible or board certified by ABEM or ABP in pediatric emergency medicine, ACEP strongly opposes these additional requirements.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2020

Use of Social Media by Emergency Physicians

Revised April 2020

Originally approved September 2018

Social media is a powerful tool for communication with beneficial applications, including emergency medical education and public health awareness. The risks of social media activity for emergency physicians, particularly when the lines between one's personal life and professional life intersect, include the potential for inappropriate patient relationships, confidentiality violations, and presenting oneself, one's employer/hospital, or one's profession in an unfavorable light. Social media can amplify errors in judgment, demeanor, and behavior far beyond their historical context.

When using social media for professional or personal purposes, emergency physicians should maintain proper standards of ethical and professional conduct.

- Emergency physicians have a responsibility to ensure that their social media activity does not violate patient rights to privacy and confidentiality. Assuring that no Protected Health Information (PHI) is posted is critical, but not sufficient, to meet this requirement. A posted timeline and description of specific events or people can reveal PHI in an inadvertent but unauthorized way.
- These concerns may extend to various information sharing or diagnostic platforms, including crowd sourcing of cases for clinical discussion or input. Verbal consent, either implicit or explicit, for such public disclosure is not adequate for a HIPAA-compliant authorization for disclosure of PHI and is not a defense or justification for such disclosures.
- Emergency physicians should maintain appropriate professional boundaries with patients, patients' families, and colleagues, regarding social media.
- All social media activity may become public and exist indefinitely. Emergency physicians should therefore be aware that their personal social media activity can reflect on public perceptions of them as physicians, their healthcare organizations, and the specialty of emergency medicine.
- Social media has created an additional area of professional liability that is independent of clinical practice and can extend to the emergency physician's administrative roles as well. In general, social media content

is not protected and is discoverable. Emergency physicians should therefore exercise great caution regarding the content of their social media messages.

- Doxxing is the malicious use of social media to reveal an individual's personal information in an effort to injure, punish, or seek revenge against that person. Use of social media in this way by physicians is a clear violation of moral and professional responsibilities.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2020

Use of the Title "Doctor" in the Clinical Setting

Revised February 2020

Originally approved April 2014

The American College of Emergency Physicians (ACEP) believes that a physician is an individual who has received a "Doctor of Medicine," "Doctor of Osteopathic Medicine," or an equivalent degree (eg, Bachelor of Medicine, Bachelor of Surgery 'MBBS') following successful completion of a prescribed course of study from a school of allopathic or osteopathic medicine.

ACEP strongly opposes the use of the term "doctor" by other professionals in the clinical setting, including by those with independent practice, where there is strong potential to mislead patients into perceiving they are being treated by a physician.

Therefore, ACEP recommends that anyone in a clinical environment including, but not limited to, a hospital, free-standing emergency department, urgent care, or retail clinic who has direct contact with a patient and presents himself or herself to the patient as a "doctor," and who is not a "physician" according to the definition above, must specifically and simultaneously declare themselves a "non-physician" and define the nature of their doctorate degree.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Use of Transesophageal Echocardiography (TEE) in the ED for Shock, Cardiac Arrest, and Procedural Guidance

Revised June 2023 with current title

Originally approved April 2017 titled "Guidelines for the Use of Transesophageal Echocardiography (TEE) in the ED for Cardiac Arrest"

1. Introduction

The American College of Emergency Physicians (ACEP) has developed these criteria to assist physicians performing emergency ultrasound (EUS) examinations using transesophageal echocardiography (TEE) during shock, cardiac arrest, and procedural guidance.

Cardiac ultrasound can be used to identify left ventricle (LV) and right ventricle (RV) dysfunction, pericardial effusion, cardiac tamponade, hypovolemia, and signs suggestive of pulmonary embolism (PE).[1] These can help to characterize the type of shock, evaluate intrinsic cardiac activity, and establish the underlying etiology in cardiac arrest (CA) and post-arrest patients.[2-4] These findings can lead to life-saving interventions, such as administration of intravenous fluids, blood products, vasopressors, thrombolytics, or the performance of a pericardiocentesis.

However, transthoracic echocardiography (TTE) may have significant limitations in critically ill and injured patients. In this setting, TTE may be limited due to body habitus, subcutaneous emphysema, chest wall trauma, mechanical ventilation, defibrillator pads and monitoring equipment, ongoing cardiopulmonary resuscitation (CPR), or a distended air-filled stomach from bag-valve-mask ventilation.[5-8] In comparison, TEE provides physicians with an ultrasound-informed evaluation in patients with undifferentiated shock or acute hemodynamic decompensation when TTE windows are inadequate.[9] During CA resuscitation, TEE is situated in the esophagus closer to the heart, providing high-quality images regardless of the patient characteristics or clinical context. In addition to the same diagnostic and prognostic role provided by TTE, TEE provides unique advantages including the potential to optimize the quality of chest compressions, shorten CPR interruptions, provide continuous hemodynamic monitoring, and facilitate emergent endovascular procedures. Focused TEE has been shown to be feasible, safe, and impactful in the resuscitation of patients in shock, cardiac arrest, or needing procedural guidance.

2. Clinical Indications[14]

a. Evaluation of shock in the presence of inadequate TTE windows
   i. Evaluation of LV function
   ii. Evaluation of RV function
   iii. Identification of pericardial effusion/tamponade
   iv. Serial hemodynamic assessments to guide therapy
   v. Identify acute aortic pathology

b. Evaluation of cardiac arrest
   i. Identification of myocardial activity
   ii. Characterization of organized/disorganized myocardial contractions, including shockable fine ventricular fibrillation
   iii. Identification of signs of right heart dysfunction
   iv. Identification of pericardial effusion/cardiac tamponade
   v. Evaluation of chest compression quality and location

c. Guidance of emergent endovascular procedures
   Real-time guidance of emergency endovascular procedures [eg, intravenous pacemaker placement, cannulation for veno-venous and veno-arterial extracorporeal membrane oxygenation (ECMO)]

3. Contraindications

a. Lack of a definitive airway
b. Known or presumed esophageal injury, esophageal stricture, tracheoesophageal fistula, or perforated viscus
c. Transgastric views should not be performed in the setting of known or presumed active upper gastrointestinal bleeding or esophageal varices
d. Recent esophageal and stomach surgery

4. Limitations

a. As a modality of cardiac EUS, focused TEE does not evaluate all aspects of cardiac function. Some findings that may contribute to hemodynamic decompensation, but are generally considered outside of the scope of EUS, include valvular pathology, septal defects, and intracardiac thrombus or mass.
b. Evaluation for extracardiac causes of shock and cardiac arrest may require complementary ultrasound examination using surface EUS modalities (eg, thoracic EUS for pneumothorax, abdominal EUS for hemoperitoneum).

5. Recommendations on Competency and Criteria for Credentialing

Competency in TEE involves motor skills required for transducer insertion and manipulation for image acquisition, and cognitive skills required for image interpretation. Current ACEP Ultrasound Guidelines recommend a benchmark minimum of 25-50 quality-reviewed scans per non-procedural EUS application to demonstrate motor and cognitive skills.[15] For ultrasound-guided procedures, 10 quality-reviewed procedures are recommended. Additionally, the guidelines recommend that for moderately different procedures (eg, transvaginal ultrasound after having already completed transabdominal obstetric ultrasound training), 10 quality-reviewed scans are recommended.

Credentialing for focused TEE is relatively unique in that as an advanced EUS application, physicians seeking credentialing in TEE have already achieved competency in image interpretation of TTE. In this respect, competency for TEE primarily entails the development of motor skills required for transducer insertion and image acquisition. Given that TEE is highly dependent on hand-eye coordination and

kinesthetic abilities, direct observation of proctored examinations using structured assessment tools is recommended for this modality.

Physicians seeking credentialing in focused TEE for emergency applications should have completed appropriate training and met competency standards in focused TTE and:

- Completed a minimum of 4-6 hours of structured TEE-specific education, including motor and cognitive skills (eg, CME or didactics);
- Demonstrated competency in the performance of a minimum of 10 proctored TEE examinations, including transducer insertion, on live patients and simulation models; and
- Completed a standardized assessment by a physician credentialed in focused TEE.

Ongoing maintenance of competency is encouraged and should include facets of quality assurance, scans performed, or other standards in accordance with local hospital policy and the ACEP Ultrasound Guidelines.

6. Framework for Focused TEE in Emergency Department

In contrast to comprehensive TEE examinations, focused TEE is performed with a goal-directed framework aimed to provide immediate and actionable information at the point of care.[16] A key feature of focused TEE examinations is the time-sensitive nature of these studies, where the diagnostic information is expected to impact management decisions within seconds or minutes. For most clinical scenarios where TEE is used, a small number of views can generally provide the information needed. Protocols for focused TEE in the ED should aim to limit the complexity of the exam and to maximize the efficiency of the procedure and the information acquired. Depending on the clinical application, purpose of the exam, and focused question(s) to assess, a different subset of views may be required or sufficient. Some of the most commonly used views in focused TEE include midesophageal 4-chamber (ME 4C), midesophageal long-axis (ME LAX), and transgastric short-axis at the level of papillary muscles (TG SAX); the aforementioned TEE views have analogous views in TTE with which emergency physicians are already familiar. Additional views used primarily in the setting of procedural guidance include midesophageal bicaval (ME Bicaval), and views of the descending thoracic aorta in short- and long-axis (ME DTA SAX and LAX, respectively). Combined, these views provide essential diagnostic, therapeutic, and procedural information pertinent to the main emergency applications of this modality. **Table 1** summarizes the main views used in focused TEE.

Focused TEE View	**Main Clinical Applications**
Mid-esophageal four chamber (ME 4C)	LV/RV size & function Pathology pericardium Regional wall motion abnormality (RWMA) Myocardial activity during resuscitation
Midesophageal long axis view (ME LAX)	LV function Chest compression location in CPR (Area of maximal compression) Pathology of mitral valve Pathology pericardium Aortic outflow tract size and morphology
Mid-esophageal transgastric short axis papillary view (TG SAX Pap)	LV function RWMA Pathology pericardium

Mid-esophageal bicaval (ME Bicaval)	Procedural guidance: · Venous guidewire in ECMO · Intravenous pacemaker placement Preload tolerance superior vena cava
Descending thoracic aorta short axis view (DTA SAX)	Evaluation of descending aorta Procedural guidance: · Arterial guidewire in ECMO
Descending thoracic aorta long axis view (DTA LAX)	Evaluation of descending aorta Procedural guidance: · Arterial guidewire in ECMO
Right ventricular inflow outflow (RV I-O)	RV size and function Pathology right ventricular outflow tract Procedural guidance: · Venous guidewire in ECMO · Intravenous pacemaker placement
Deep transgastric 5 chamber view (Deep TG 5C)	LV/RV size & function Pathology pericardium Doppler left ventricular outflow tract
Midesophageal ascending aorta short axis view (ME Asc Ao SAX)	Saddle embolism Evaluation of pulmonary trunk and ascending aorta
Midesophageal ascending aorta long axis view (ME Asc Ao LAX)	Saddle embolism Evaluation of pulmonary trunk and ascending aorta

Table 1. Description of the transducer location, visualized anatomy and clinical applications of views most commonly used in focused TEE

7. Procedure Description

Similar standard requirements for any EUS examination apply to focused TEE. These include systematic recording and archiving of video images, procedure documentation, and regular quality assurance of studies.

a. Procedure preparation. While in some scenarios (eg, cardiac arrest resuscitation), the procedure is performed emergently, physicians should follow general principles applying to any invasive procedure such as analgesia and sedation to minimize patient's discomfort and optimize the conditions for the procedure. In contrast with some comprehensive TEE examinations, focused TEE in the ED is performed in intubated patients. Depending on the clinical indication, sedation, analgesia, and/or paralytics may be required to optimize the procedure.
b. Transducer insertion. The placement of the TEE transducer is similar to the placement of an oral gastric tube, a procedure commonly performed by emergency physicians. To facilitate placing the transducer safely and efficiently, maintain midline position while advancing the transducer into the oropharynx. This can be accomplished by visualization under video or direct laryngoscopy, or manually guiding the transducer's tip onto the base of the tongue. Once at the base of the tongue, a "chin lift" or "jaw-thrust" maneuver will facilitate passage of the transducer into the esophagus.

Placement of a bite block previously loaded into the transducer is recommended to avoid transducer damage caused by bite marks.

c. Logistics of focused TEE. Like many other emergency procedures, performing focused TEE can present some logistical challenges for physicians, particularly during cardiac arrest resuscitation. In this setting, given the need to perform multiple time-dependent interventions, a predefined protocol to incorporate TEE safely and efficiently into the workflow of resuscitation is recommended. The specific location of the ultrasound machine as the position of the operator varies depending on a number of factors including the number of operators, specific roles, and the physical space. The ultrasound systems used for focused TEE in the ED are the same used for other common EUS applications. Given that TEE cannot remain with the machine, it is recommended that this storage location be easily accessible and close to the high-acuity resuscitation rooms of the ED in which it will be most used.

8. Documentation

Cardiac EUS should be obtained and interpreted by the treating physician and used to guide decision-making in real time. These findings should be documented in the medical record. Documentation should include the indication, description of the exam performed, and pertinent findings. Images should be stored as part of the medical record in accordance with facility policy requirements.

9. Quality Control and Improvements, Safety, Infection Control and Patient Education[17]

Since TEE transducers come into contact with mucous membranes, a high-level disinfection is required after use. Policies and procedures related to quality, safety, infection control and patient education should be developed in accordance with existing hospital policies for TEE transducers.

References

1. Kennedy Hall M, Coffey EC, Herbst M, Liu R, Pare JR, Andrew Taylor R, Thomas S, Moore CL. The "5Es" of emergency physician-performed focused cardiac ultrasound: a protocol for rapid identification of effusion, ejection, equality, exit, and entrance. *Acad Emerg Med*. 2015;22(5):583-93.
2. Gottlieb M, Alerhand S. Managing Cardiac Arrest Using Ultrasound. *Ann Emerg Med*. 2022;SO196-0644(22)01129-9.
3. Long B, Alerhand S, Maliel K, Koyfman A. Echocardiography in cardiac arrest: An emergency medicine review. *Am J Emerg Med*. 2018;36(3):488-93.
4. Perera P, Mailhot T, Riley D, Mandavia D. The RUSH exam: Rapid Ultrasound in SHock in the evaluation of the critically lll. *Emerg Med Clin North Am*. 2010;28(1):29-56, vii.
5. Cook CH, Praba AC, Beery PR, et al. Transthoracic echocardiography is not cost-effective in critically ill surgical patients. *J Trauma*. 2002;52:280-4.
6. Clattenburg EJ, Wroe P, Brown S, Gardner K, Losonczy L, Singh A, Nagdev A. Point-of-care ultrasound use in patients with cardiac arrest is associated prolonged cardiopulmonary resuscitation pauses A prospective cohort study. *Resuscitation*. 2018;122:65-8.
7. Hu K, Gupta N, Teran F, Saul T, Nelson BP, Andrus P. Variability in Interpretation of Cardiac Standstill Among Physician Sonographers. *Ann Emerg Med*. 2018;71(2):193-8.
8. Mark DG, Ku BS, Carr BG, etal. Directed bedside transthoracic echocardiography: preferred cardiac window for left ventricular ejection fraction estimation in critically ill patients. *Am J Emerg Med*. 2007;25(8):894-900.
9. Arntfield R, Pace J, Hewak M, Thompson D. Focused Transesophageal Echocardiography by Emergency Physicians is Feasible and Clinically Influential: Observational Results from a Novel Ultrasound Program. *J Emerg Med*. 2016;50(2):286-94.
10. Teran F, Dean AJ, Centeno C, et al. Evaluation of out-of-hospital cardiac arrest using transesophageal echocardiography in the emergency department. *Resuscitation*. 2019;137:140-7.

11. Wray TC, Johnson M, Cluff S, et al. Transesophageal Echocardiography Performed by Intensivist and Emergency Physicians-A 5-Year, Single-Center Experience. *J Intensive Care Med*. 2022;37(7):917-24.
12. Arntfield R, Lau V, Landry Y, Priestap F, Ball I. Impact of Critical Care Transesophageal Echocardiography in Medical-Surgical ICU Patients: Characteristics and Results From 274 Consecutive Examinations. *J Intensive Care Med*. 2020;35(9):896-902.
13. Prager R, Bowdridge J, Pratte M, Cheng J, McInnes MD, Arntfield R. Indications, Clinical Impact, and Complications of Critical Care Transesophageal Echocardiography: A Scoping Review. *J Intensive Care Med*. 2023;38(3):245-72.
14. Beaulac GR, Teran F, Lecluyse V, et al. Transesophageal Echocardiography in Cardiac Arrest: the Heart and Beyond [published online ahead of print, 2023 Jan 5]. *Can J Cardiol*. 2023;S0828-282X(23)00001-6.
15. American College of Emergency Physicians. Ultrasound guidelines: emergency, point-of-care, and clinical ultrasound guidelines in medicine [policy statement]. Approved April 2023. Accessed July 2023: https://www.acep.org/patient-care/policy-statements/ultrasound-guidelines-emergency-point-of--care-and-clinical-ultrasound-guidelines-in-medicine
16. Teran F, Prats MI, Nelson BP, et al. Focused Transesophageal Echocardiography During Cardiac Arrest Resuscitation: JACC Review Topic of the Week. *J Am Coll Cardiol*. 2020;76(6):745-54.
17. American College of Emergency Physicians. Guideline for Ultrasound Transducer Cleaning and Disinfection [policy statement]. Approved April 2021. Accessed July 2023: https://www.acep.org/patient-care/policy-statements/guideline-for-ultrasound-transducer-cleaning-and-disinfection

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved January 2022

Verification of Endotracheal Tube Placement

Reaffirmed January 2022

Revised January 2016, April 2009

Originally approved October 2001 replacing "Expired Carbon Dioxide Monitoring" approved September 1994

Confirmation of proper endotracheal tube placement should be completed in all patients at the time of initial intubation both in the hospital and out-of-hospital settings. Physical examination methods such as auscultation of chest and epigastrium, visualization of thoracic movement, and fogging in the tube are not sufficiently reliable to confirm endotracheal tube placement. Similarly, pulse oximetry and chest radiography are not reliable as sole techniques to determine endotracheal tube location.

During intubation, direct visualization of the endotracheal tube passing through the vocal cords into the trachea, especially with the use of a video laryngoscope, constitutes firm evidence of correct tube placement, but additional techniques should be used as objective findings to confirm proper endotracheal tube position.

Use an end-tidal carbon dioxide detector (i.e., continuous waveform capnography, colorimetric and non-waveform capnography) to evaluate and confirm endotracheal tube position in patients who have adequate tissue perfusion.

Esophageal detector devices are not as reliable as the various forms of capnography for the verification of endotracheal tube placement.

For patients in cardiac arrest and for those with markedly decreased perfusion, both continuous and non-waveform capnography may be less accurate. In these situations, if capnography is inconclusive, other methods of confirmation such as an esophageal detector device, ultrasound, or bronchoscopy should be used.

Ultrasound imaging may be used to reliably confirm endotracheal tube placement. However, this should be performed by someone who is experienced in this technique.

Properly placed endotracheal tubes may become displaced due to movement of patients and/or equipment. Continuous assessment of correct endotracheal tube placement with continuous waveform capnography is ideal. Endotracheal tube position should be reconfirmed immediately in all patients when their clinical status deteriorates or at any time there is concern regarding proper location of the endotracheal tube.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2019

Violence-Free Society

Revised April 2019

Reaffirmed June 2013

Revised January 2007

Reaffirmed October 2000

Originally approved January 1996

The American College of Emergency Physicians (ACEP) strongly supports the goal of a society free from violence. ACEP recognizes that violence takes many forms, including but not limited to, sexual assault,–intimate partner violence, child and elder abuse, terrorism and acts intended to cause mass casualty incidents, firearm violence, and anti-minority/politically motivated violence. ACEP believes emergency physicians have a public health responsibility to reduce the prevalence and impact of violence through advocacy, education, legislation, and research initiatives. ACEP will work to improve violence prevention programs and develop clinical tools for emergency departments (EDs) to treat patients presenting with the mental and physical consequences of violence.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2019

Violence Prevention and Intervention in Emergency Medical Services Systems

Originally approved April 2019

The American College of Emergency Physicians (ACEP) reaffirms that Emergency Medical Services (EMS) systems provide essential healthcare elements in the health and wellbeing of communities. With innovative, involved physician medical oversight, EMS is capable of serving multiple roles across the spectrum of public health and public safety.

ACEP believes that optimal EMS medical care can only be achieved when patients, EMS professionals, and all other persons in the EMS care environment are protected against violent acts. Such acts constitute a preventable and significant public health problem.

As such, ACEP advocates for specific violence preventions and interventions in EMS, beyond the "awareness level" education that historically has largely constituted EMS violence-related initiatives.

Further, ACEP strongly encourages all states to enact legislation that provides the maximum category of offense and criminal penalty against individuals who consciously commit violence against EMS and all healthcare professionals.

To promote safety and security in the EMS environment, ACEP believes in supporting violence prevention and intervention initiatives that include:

- Attaining and maintaining an EMS culture of patient and personnel safety, based upon community/system specific risk assessments that include:
  - adequate staffing of professionals on emergency apparatus
  - sufficient training for professionals in violence risk assessment, violence avoidance/de-escalation maneuvers, self-defense tactics, and patient and colleague defense tactics
  - provision, training, and utilization of devices designed as physical barriers against bodily injury
  - provision of other security components deemed essential in collaboration with violence/law enforcement experts

  - periodic assessments to measure compliance and effectiveness of violence-related initiatives
- Coordinating with applicable law enforcement agencies, to provide rapid response of law enforcement officers to EMS patients and/or EMS professionals in distress related to violence.
- Developing written operational protocols, with relevant input from EMS professionals, for violent situations occurring in the EMS environment.
- Developing and enforcing mandatory reporting policies that require EMS professionals to promptly report verbal and/or physical assaults to a clearly defined authority established by applicable law and/or within EMS system policy. Such policies should clearly state that reporting will not result in any adverse action by the EMS system such as termination, threatening to terminate, demoting, suspending, or in any manner discriminating against an EMS professional who reports an assault in good faith.
- Adopt a zero tolerance policy for violence against EMS professionals, patients, and others in the EMS environment. Educate EMS professionals that any assault is not considered "part of the job."
- Provide appropriate post-incident support for EMS professionals involved in violent events including prompt medical treatment, debriefing options, counseling resources, and professional assistance as indicated.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved April 2022

Withholding or Termination of Resuscitation in Pediatric Out-of-Hospital Traumatic Cardiopulmonary Arrest

Reaffirmed April 2022

Originally approved
September 2013

A joint policy statement of the American College of Surgeons, American Academy of Pediatrics, American College of Emergency Physicians, and the National Association of EMS Physicians

Available online at:.
https://www.annemergmed.com/article/S0196-0644(14)00074-2/fulltext

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2022

Work Requirements for Medicaid Beneficiaries

Originally approved June 2022

The American College of Emergency Physicians (ACEP) opposes the imposition of work requirements mandating employment or pursuit of employment for Medicaid beneficiaries to obtain or retain access to health insurance coverage.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved June 2023

Workforce Diversity in Health Care Settings

Revised June 2023, November 2017

Reaffirmed June 2013, October 2007

Originally approved October 2001

The United States (US) population is becoming increasingly diverse, yet diversity within the health care workforce has lagged. In 2021, the US government census found that Hispanic and Black or African American US residents account for 18.9% and 13.6% of the US population, respectively. However, among active physicians in 2018, only 5.8% identified as Hispanic and 5% as Black or African American. Similar trends exist among physicians from other underrepresented minority (URM) groups and those of varying disability status, sexual orientation, gender identity, and socioeconomic origin. URM physicians also hold a disproportionately lower number of leadership positions, particularly in academia, compared to their non-minority colleagues.

In 2004, the Institute of Medicine, later renamed the National Academy of Medicine, identified ensuring diversity in health care settings as a compelling interest.[1] Physicians who belong to URM groups are much more likely to practice in environments where they treat minority patients and patients of lower socioeconomic strata.[2,3] Studies show that diversity among health professionals promotes better access to health care, improves health care quality for underserved populations, and better meets the health care needs of our increasingly diverse population.[3-5] Additionally, increasing diversity in the workforce has the potential to reduce existing health disparities and decrease their associated economic and social burdens.[4,5]

The value of diversity towards inclusive work environments and equitable patient care is not restricted to racial and ethnic groups; in fact, inclusion of clinicians who belong to other traditionally underrepresented subgroups including trans or gender-diverse individuals or those with differing appearances or abilities may similarly enrich the clinical space. Health disparities have been documented among historically disadvantaged populations, including lesbian, gay, bisexual, transgender and queer/ questioning (LGBTQ) individuals and likely tied to systemic bias and discrimination.[6] When surveyed, nurses who identify as LGBTQ have highlighted the importance of inclusive policies in creating a "welcoming and inclusive" environment for sexual and gender minorities.[7] Workplace hostility and discrimination prevent clinicians from being forthcoming about their LGBTQ status, furthering exclusion; the antidote is visibility and

inclusion. Along these lines, in a survey of physicians that showed significant implicit and explicit weight bias against obese individuals, male sex and lower body mass index (BMI) were associated with increased weight bias, while having an increased BMI was associated with decreased weight bias.[8]

The American College of Emergency Physicians believes that:

- Hospitals and emergency physicians should work together to promote staffing of hospitals and their emergency departments with highly qualified individuals of diverse race, ethnicity, sex (including gender, gender identity, sexual orientation, pregnancy, marital status), nationality, religion, age, disability, or other characteristics that do not otherwise preclude an individual emergency physician from providing equitable, competent patient care.
- Attaining diversity with well qualified physicians in emergency medicine that reflects our multicultural society is a desirable goal.
- Health professionals, educators, and administrators must recognize and address institutional barriers and policies that may contribute to underrepresentation of certain groups in the workforce.
- To maintain and increase the supply of primary care physicians who care for vulnerable populations over the coming decades, educational and health care entities should establish and promote pipelines to develop and support future professionals.[4,5]
- A diverse workforce can display increased cultural competence across cultural practices, languages, and social issues.[1,4]
- Culturally congruent health care interactions can improve adherence, trust, and patient experience, thereby expanding quality of, and access to, care for traditionally hesitant or disengaged populations.

Recommendations:

- Entities involved in educating, recruiting, and hiring health professionals should engage in robust and ongoing collection of data that include representation of underrepresented minority (URM) groups.
- Strategies should be implemented to recruit and retain a diverse workforce, including mentorship programs, scholarships, and grants.[9]
- Increasing representation in leadership provides models for current and future generations of students and young professionals.
- At the system level, implicit and unconscious bias should be recognized and meaningfully addressed. Because bias may influence admissions and search committees, bias training and the implementation of structured interviews should be considered.[10,11]

References:

1. Institute of Medicine (US) Committee on Institutional and Policy-Level Strategies for Increasing the Diversity of the U.S. Healthcare Workforce, Smedley BD, Stith Butler A, Bristow LR, eds. *In the Nation's Compelling Interest: Ensuring Diversity in the Health-Care Workforce*. Washington (DC): National Academies Press (US); 2004.
2. Franks NM, Gipson K, Kaltiso SA, et al. The Time Is Now: Racism and the Responsibility of Emergency Medicine to Be Antiracist. *Ann Emerg Med*. 2021 Nov;78(5):577-586. doi: 10.1016/j.annemergmed.2021.05.003. Epub 2021 Jun 24. PMID: 34175155; PMCID: PMC8487015.
3. Woreta, FA, Gordon LK, Knight OJ, et al. Enhancing Diversity in the Ophthalmology Workforce. *Ophthalmology*. 2022;129(10):e127–e136. https://doi.org/10.1016/j.ophtha.2022.06.033
4. Mensah MO, Sommers BD. The Policy Argument for Healthcare Workforce Diversity. *J Gen Intern Med*. 2016 Nov;31(11):1369–1372. https://doi-org.libproxy.albany.edu/10.1007/s11606-016-3784-1
5. LaVeist TA, Pierre G. Integrating the 3Ds--social determinants, health disparities, and health-care workforce diversity. *Public Health Rep.* 2014 Jan-Feb;129 Suppl 2(Suppl 2):9–14. https://doi.org/10.1177/00333549141291S204

6. Fredriksen-Goldsen KI, Simoni JM, Kim HJ, et al. The health equity promotion model: Reconceptualization of lesbian, gay, bisexual, and transgender (LGBT) health disparities. *Am J Orthopsychiatry*. 2014;84(6):653-663. doi:10.1037/ort0000030
7. Eliason MJ, Dejoseph J, Dibble S, Deevey S, Chinn P. Lesbian, gay, bisexual, transgender, and queer/ questioning nurses' experiences in the workplace. *J Prof Nurs*. 2011;27(4):237-244. doi: 10.1016/ j.profnurs.2011.03.003
8. McLean ME, McLean LE, McLean-Holden AC, et al. Interphysician weight bias: A cross-sectional observational survey study to guide implicit bias training in the medical workplace. *Acad Emerg Med*. 2021;28(9):1024-1034. doi:10.1111/acem.14269
9. Mason BS, Ross W, Chambers MC, et al. Pipeline program recruits and retains women and underrepresented minorities in procedure based specialties: A brief report. *Am J Surg*. 2017 Apr; 213(4):662–665. https://doiorg.libproxy.albany.edu/10.1016/j.amjsurg.2016.11.022
10. Hughes RH, Kleinschmidt S, Sheng AY. Using structured interviews to reduce bias in emergency medicine residency recruitment: Worth a second look. *AEM Educ Train*. 2021 Sep 1;5(Suppl 1):S130–S134. https://doi.org/10.1002/aet2.10562
11. Sumra H, Riner AN, Arjani S, et al. Minimizing implicit bias in search committees. *Am J Surg*. 2022 Oct:224(4):1179–1181. https://doi-org.libproxy.albany.edu/10.1016/j.amjsurg.2022.05.014

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved October 2020

Worldwide Nuclear Disarmament

Reaffirmed October 2020

Revised April 2014

Reaffirmed October 2008, October 2002

Originally approved October 1998 from a Board Motion approved April 1982

The American College of Emergency Physicians adds its voice to other organizations and individuals urging our government to continue to seek international nuclear weapons control, reduction, and eventual disarmament.

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

POLICY STATEMENT

Approved February 2023

Writing Admission and Transition Orders

Revised February 2023, October 2017, April 2010 with current title

Reaffirmed October 2001 and October 1997

Revised October 1993

Reaffirmed April 1992

Originally approved October 1989 titled, "Writing Admission Orders"

As an adjunct to this policy statement, ACEP has prepared a Policy Resource and Education Paper (PREP) entitled, "Writing Admission and Transition Orders"

The American College of Emergency Physicians (ACEP) believes that the best patient care occurs when there is no ambiguity as to which physician (or designee) is responsible for care of a patient. The physician (or designee) in charge of a hospitalized patient's care (eg, the admitting physician or designee) is established when he/she accepts responsibility for the patient's care by verbal or written communication, by policy, or by providing, authorizing, or writing admission orders for that patient. Emergency physicians (or designee) generally do not have admitting privileges and should not provide ongoing inpatient care. ACEP recognizes that the admitting physician (or designee) may not be immediately available to write admission orders. Thus, to avoid delays in care, emergency physicians (or designee)may write transition orders intended to facilitate transfer to the most appropriate inpatient unit. However, this is not intended to imply or invoke a responsibility on behalf of the emergency physician or designee to provide ongoing care of such patients once they leave the emergency department (ED) for their inpatient unit.

Therefore, ACEP endorses the following principles:

Patients are best served when there is a clear delineation of which physician (or designee) has patient care responsibility.

- The best practice for patients admitted through the ED is to have the admitting physician (or designee) evaluate and write admitting orders for ED patients requiring hospitalization at the time of admission or as soon as possible thereafter.
- The admitting physician (or designee) is responsible for ongoing care of the patient after accepting responsibility for the patient's care whether verbally, by policy, or by writing admission orders, regardless of the patient's physical location within the hospital.
- The emergency physician (or designee) is responsible for ongoing care of the patient only while the patient is physically present in the ED and under his/her exclusive care.
- There are circumstances where, in the interest of patient care, patient safety and operational efficiency, an emergency physician (or designee) may be asked to and may choose to write transition orders.

- Transition orders are meant to include essential treatment and assessment parameters upon the patient's initial admission to an inpatient bed; they should be time limited and should serve as a bridge before complete admission orders (including the use of telemedicine) are provided by the admitting physician (or designee). It is ideal for the admitting physician (or designee) to write the admitting orders at the time of admission or as soon as possible thereafter.
- When it is necessary for an emergency physician (or designee) to write orders that appear to extend control and responsibility for the patient beyond treatment in the ED to the inpatient setting, it is understood that the admitting physician (or designee) is responsible for providing inpatient care, and that by writing transition orders, the emergency physician (or designee) will not be assuming that responsibility.[1]
- Hospital and ED policies and medical staff bylaws should clearly delineate responsibility and privileges for writing admission and transition orders (including the use of telemedicine) and define an appropriately limited period of time for the admitting physician (or designee) to evaluate patients and write admission orders.

[1] This policy is not meant to address the emergency episodic care that emergency physicians (or designee) may provide to inpatients on a case by case basis (ie, cardiac arrest, emergent procedures, etc.). Refer to the ACEP policy statement, "Emergency Physician Response to In-Hospital Emergencies Outside the Emergency Department."