

ACEP Simulation Case Template

SIMULATION CASE TITLE: Urinary retention/obstruction

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PATIENT NAME: George Mustermann

PATIENT AGE: 92

CHIEF COMPLAINT: Dehydration/weakness

Brief narrative description of case
Include the presenting patient chief complaint and overall learner goals for this case

A 92-year-old male with history of prostatic hyperplasia and hypothyroidism presents from home with son for several days of gradually worsening weakness and decreased ambulation. The goals of this case are to consider a wide differential for vague complaints in elderly patients and realize that acute on chronic urinary retention may be minimally symptomatic.

Primary Learning Objectives
What should the learners gain in terms of knowledge and skill from this case? Use action verbs and utilize Bloom's Taxonomy as a conceptual guide

- Use collateral historians to augment patient history
- Understand that vague complaints, particularly in the elderly, can represent serious pathology
- Perform bedside renal ultrasound
 - o Estimate bladder volume*
- Select appropriate disposition

Critical Actions
List which steps the participants should take to successfully manage the simulated patient. These should be listed as concrete actions that are distinct from the overall learning objectives of the case.

- IV, monitor
- Perform renal/bladder ultrasound to identify obstruction
- Insert indwelling urinary catheter to relieve acute obstruction
- Start antibiotics to treat bacterial cystitis
- Admit to general medicine for further management of acute kidney injury

Learner Preparation
What information should the learners be given prior to initiation of the case?

A 92-Year-old Male presents from home with worsening weakness leading to a fall 2 days prior

Required Equipment <i>What equipment is necessary for the case?</i>	Ultrasound Indwelling catheter kit
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INITIAL PRESENTATION			
Initial vital signs	HR: 72 BP: 144/85 RR: 18 O₂SAT: 94% T: 37.1 °C		
Overall Appearance <i>What do learners see when they first enter the room?</i>	An obese elderly male in no acute distress accompanied by his son.		
Actors and roles in the room at case start <i>Who is present at the beginning and what is their role? Who may play them?</i>	Patient's son giving collateral information Nurse to execute foley catheter		
HPI <i>Please specify what info here and below must be asked vs what is volunteered by patient or other participants</i>	92-Year-old male brought in by his son because he's had worsening ambulation status and 1 fall at home. (volunteered, given by son) Patient reports feeling lightheaded and having trouble walking. (volunteered) Feeling urinary urgency and frequency (asked) Small amount of urine passing (asked) No abdominal pain (asked) Using walker now when previously only needed a cane to ambulate (volunteered, son) Decreased oral intake since the fall 2 days ago (asked, son) History of prostate problems (asked, son) A few years ago, he required a urinary catheter placed when he had abdominal pain (asked, son)		
Past Medical/Surg History	Medications	Allergies	Family History
Hyperlipidemia Hypothyroidism Benign Prostatic Hyperplasia No surgeries	Miralax Synthroid Tamsulosin	NKDA	Hypertension, hypothyroidism

Physical Examination	
General	Obese elderly male lying in stretcher in no distress
HEENT	Dry oral mucosa, otherwise Normal
Neck	Normal
Lungs	Clear breath sounds no tachypnea, no rhonchi or rales
Cardiovascular	Regular rate and rhythm, no murmurs
Abdomen	Non-distended, normal bowel sounds, mild suprapubic tenderness. No CVA tenderness
Neurological	Awake and alert. Oriented to person, place, and time. Normal cranial nerve examination. Grossly normal extremity strength while lying in stretcher.
Skin	Dry, no rashes, normal color
GU	Circumcised glans, no swelling or tenderness
Psychiatric	Calm and cooperative

1) SCENARIO STATES, MODIFIERS AND TRIGGERS

2) *This section should be a list with detailed description of each step than may happen during the case. If medications are given, what is the response? Do changes occur at certain time points? Should the nurse or other participant prompt the learners at given points? Should new actors or participants enter, and when? Are there specific things the patient will say or do at given times?*

PATIENT STATUS	LEARNER ACTIONS, MODIFIERS & TRIGGERS TO MOVE TO THE NEXT STATE	
1. Baseline State Rhythm: NSR HR: 72 BP: 144/85 RR: 18 O₂SAT: 94% T: 37.1 °C	<u>Learner Actions</u> <ul style="list-style-type: none"> • IV, place patient on monitor • Obtain patient history and perform physical exam • Interview son for collateral history • IV fluids may be given 	<u>Modifiers</u> <i>Changes to patient condition based on learner action</i> <ul style="list-style-type: none"> • If son is not interviewed BPH history is not given • If bedside US not performed, UA will not be able to be collected and patient will decline urinary catheter insertion, stating he just urinated. <u>Triggers</u> <i>For progression to next state</i> <ul style="list-style-type: none"> • Labs/imaging ordered

<p>2. Rhythm: NSR HR: 88 BP: 130/95 RR: 20 O₂SAT: 95 T: 36.5°C</p>	<p><u>Learner Actions</u></p> <ul style="list-style-type: none"> • Bedside renal/bladder ultrasound performed • Bladder volume calculated • Place indwelling urinary catheter • Lab values return 	<p><u>Modifiers</u></p> <ul style="list-style-type: none"> • If urinary catheter not placed patient becomes febrile to 39.1°C • If fluids given and US not performed, pt reports no urge to urinate and increasing suprapubic pain • If learners ask for bladder scan by nursing staff, they do not have access to one. <p><u>Triggers</u></p> <ul style="list-style-type: none"> • US diagnosis of severe urinary retention.
<p>3. Rhythm: NSR HR: 67 BP: 125/77 RR: 16 O₂SAT: 96 T: 37.3°C</p>	<p><u>Learner Actions</u></p> <ul style="list-style-type: none"> • Order appropriate antibiotics to treat UTI • Consult hospitalist for admission 	<p><u>Modifiers</u></p> <ul style="list-style-type: none"> • If hospitalist is not called for admission, the son will prompt the learners by asking “so can I take my father home?” <p><u>Triggers</u></p> <ul style="list-style-type: none"> • END OF CASE – Hospitalist arrives to admit patient.

SUPPORTING DOCUMENTS, LAB RESULTS AND MULTIMEDIA

<p>Lab Results</p>	<p>CBC: 18/15.1/42.7/191 Chem7: Na 127/ K 4.4/ Cl 101/ CO2 17/ Bun 68/ Cr 3.5 (prior 1.4)/ Glu 152 Calcium: 8.4 Magnesium: 2.3 Phos: 3.2 UA: +1 protein / trace blood/ -nitrites/ Large LE/ >50 WBC/ Occasional bacteria/ no casts</p>
<p>EKG</p>	<p>Sinus tachycardia with rate of 108 No ST segment changes or T-wave inversions</p>
<p>CXR CT imaging</p>	<p>CXR – no abnormal infiltrates, normal heart size CT head – No intracranial hemorrhages, normal cerebral ventricle size CT C spine – No fracture or malalignment CT Abdomen and pelvis – Not completed during case</p>

Ultrasound Video Files	Renal ultrasound- mild right and left sided hydronephrosis. Bladder distended to almost 1 L with internal debris
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SAMPLE QUESTIONS FOR DEBRIEFING
<ol style="list-style-type: none"> 1) What are some examples of pre-renal, intrinsic, and post-renal cause of acute kidney injury? 2) Describe the appearance of hydronephrosis on ultrasound. 3) How could you estimate bladder volume on bedside ultrasound?

Ideal Scenario Flow

Provide a detailed narrative description of the way this case should flow if participants perform in the ideal fashion.

Learners will enter the room to find a stable appearing patient with vague complaints. They should take a detailed history from the patient, which is limited, requiring them to include the patient’s son to get a sense of change from baseline and collateral information. By examination and history, they may consider dehydration and UTI as causes of the presentation and order labs and fluids for treatment. The patient cannot not provide a urine sample (due to obstruction) if the students do not perform the renal US demonstrating bladder distention. If catheterization is requested before the US is performed the nurse should inform the learners that the patient and his son don’t want an invasive procedure unless absolutely necessary. The patient will state they don’t feel like they have to urinate after fluids are given, but may have increasing suprapubic pain. If CT of the abdomen is ordered, the learners should be informed that it is being taken up by a critical patient and will be delayed persistently.

Once urinary obstruction is confirmed by US the learners should request or perform an indwelling urinary catheterization. The urinalysis result should prompt the learner to treat the patient with antibiotics for UTI and the patient should be admitted to general medicine for his acute kidney injury, UTI, and decreased mobility.

Anticipated Management Mistakes

Provide a list of management errors or difficulties that are commonly encountered when using this simulation case.

1. ***Failure to recognize overflow incontinence in the setting of chronic obstruction: With chronic obstruction, patients may not have severe pain and can pass small amounts of urine, while still having a significant amount retained.***

2. ***Anchoring on dehydration as the sole cause of acute kidney injury: Patients can always have multiple pathologies. Failure of adequate hydration to result in urination should prompt investigation into a concurrent obstructive cause.***
3. ***Only looking at the kidneys when performing renal ultrasound: A complete bedside renal ultrasound includes the bladder. Leaving the bladder out of the examination can lead to delays in diagnosing bladder outlet obstruction as a cause of oliguria or acute kidney injury.***