Review of Discharge Risk Stratification and Assessment Tools for All ED Patients

Screening Tool	Year Published	Structure	Limitations
ED revisit algorithm	2014	Estimates risk of a 30-day revisit, with score range of 0 to 100. Multiple inputs including demographics (age), encounter history (chronic disease diagnosis), encounter diagnosis, demographics (patient education), clinical facility, encounter history (visit type counts), encounter lab test results, past year outpatient prescriptions, encounter procedure, encounter history (past year counts of total outpatient prescriptions, lab and radiology tests), and demographics (patient income).	Data from Maine Health Information Exchange. No external validation.
Risk score predicting inpatient admission or death/ICU placement within 7 days of ED discharge	2018	Patients with the greatest likelihood and highest score (out of 40) of developing an inpatient admission within seven days of discharge were age ≥ 80 years old (score of 1), BMI <18.5 (score of 3), SBP ≤120 mm Hg (score of 2), HR ≥ 100 bpm (score of 4), Charlson comorbidity index score of 7 or greater (score of 8), ED LOS of 10–24 hours (score of 7), and an inpatient admission in the past seven days (score of 5). Patients at greatest risk for death or an ICU placement (score of 19) were male (score of 1), age ≥ 80 years old (score of 1), BMI <18.5 (score of 3), SBP ≤120 mmHg (Score of 2), HR ≥100 bpm (score of 3), CCI score of 7+ (Score of 5), and ED LOS of 10–24 hours (score of 4).	Single health system retrospective cohort study of patients older than 65 years old. 75% of data was the derivation sample and 25% was the validation sample. No external validation.
*S*creening for *H*ealthcare f*O*llow-*U*p *T*ool (SHOUT) scoring system	2019	Discharge failure was defined as ED revisits within a short period of time from the index ED visit (e.g., 3 , 7, 14 or 30 days) and poor patient adherence to PCP or specialist clinic follow-up. Nine independent variables predicting discharge failures were: (1) homelessness, (2) PCP status, (3) male sex, (4) history of chronic diseases, (5)	Single site retrospective cohort study. 50% of the data was the derivation sample and 50% wad the validation

		lack of insurance, (6) low level of acuity (ESI 4–5), (7) White race/ethnicity, (8) arriving by health-assisted transportation and (9) abnormal vital signs at discharge.	sample. No external validation.
Prediction of 72-hour AND 9-day ED bouncebacks	2019	Gradient boosting machine learning model for ED return visits withing 72 hours and 9 days with pertinent variables of mean age, male gender, arrival by ambulance, mean triage heart rate, ESI, Medicaid insurance, mean number of previous ED visits, prevalence of COPD or CHD, and prevalence of alcohol or substance use.	Single site with no external validation.