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Unrecognized delirium in a cohort of older ED patients assessed at a tertiary care center: signs of improvement?

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Introduction: BACKGROUND: Recognition rates of delirium in older ED patients were reported between 13 to 25% in studies conducted in the U.S in the 1990's. Recently, there has been increased attention to delirium in Emergency Medicine, with the development of Geriatric curriculums in Canada specifically focused on delirium. However rates of delirium recognition have not been reassessed in Canadian ED's. OBJECTIVES: To assess the rate of delirium recognition by ED staff in a cohort of older ED patients assessed at a tertiary care Canadian ED. **Methods:** STUDY DESIGN: Prospective observational cohort study at a Canadian teaching ED. PARTICIPANTS: Eligible patients were aged ≥ 70 years and older who had stayed in the ED for a minimum of 4 hours. We excluded patients who were critically ill, visually impaired or otherwise unable to communicate. DATA COLLECTION: Trained research assistants approached clinical staff prior to approaching patients to confirm that patients were delirium free. They then assessed demographics, ED length of stay (LOS) and cognition using the validated Montreal Cognitive Assessment scale (MOCA), mini-mental status exam (MMSE), delirium index and Richardson Agitation Scale (RASS) at baseline. Delirium was assessed using the validated Confusion Assessment Method (CAM). We report descriptive statistics and 95% confidence intervals (CI) where appropriate. **Results:** We enrolled 203 patients of which 102 (50.3%) were female. Their mean age was 81.0 years, mean LOS was 16.3 hours, mean MOCA was 23.4 and mean MMSE was 26.7. RA's detected delirium using the CAM in 16/203 patients (7.9%, 95% CI 4.6 to 12.5%). Mean MOCA and MMSE for delirious patients was 13.4 and 18.3 and their mean DI was 6.4. All CAM positive patients were deemed to be delirium free by clinical staff. RA alerted clinical staff in all cases where patients had delirium, but 3/16 were discharged home (18.8%, 95% CI 4.1 to 45.7%). **Conclusion:** Our findings confirm previous low delirium recognition rates in a Canadian Tertiary ED. Future research should explore barriers and facilitators to recognizing delirium in the ED.

Keywords: delirium, emergency department, geriatrics

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The incidence of intracranial bleeding following a fall on level ground in geriatric patients

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Introduction: Falls are a common presentation to the emergency department among geriatric patients. The incidence of intracranial bleeding following a fall is unclear and approach to ordering a CT head scan is not standardized. The aim of this systematic review and meta-analysis was to establish the incidence of intracranial bleeding after a fall in geriatric patients. **Methods:** The systematic review was registered in PROSPERO. Two authors independently searched Medline and EMBASE (OVID interface) from conception till 20th June 2018. The search combined multiple MESH terms and text words for [falls], [elderly] and [brain injury]. The search was repeated in Google Scholar and recent conference abstracts were reviewed. Studies were included if $> 80\%$ of the included patients were > 65 years who presented to the emergency department after a fall on

level ground. We excluded studies enrolling select populations (for example trauma team activation, neurosurgical patients or only anticoagulated patients). There were no language restrictions. The random effects model was used to perform a meta-analysis on the incidence of intracranial bleeding in geriatric patients after a fall on level ground.

Results: From the 7,043 titles and abstracts, 175 full articles were reviewed and 7 studies, including 6758 patients, were included in the analysis. 2/7 studies were prospective. The studies varied in their inclusion criteria with 3/7 studies only including patients with normal neurological testing. Most retrospective studies included patients if they had a CT head scan. Neither prospective study imaged all patients but both followed the patients for a delayed diagnosis of intracranial bleeding. Risk of bias was moderate or high for the majority of studies. The random effects pooled incidence of intracranial bleeding was 5.2% (95% CI 2.8 – 8.2%), I² 96%. **Conclusion:** Around 1 in 20 geriatric patients who present to the emergency department after a fall have intracranial bleeding. This point estimate can be used to calculate sample size requirements for future studies on intracranial bleeding in this population.

Keywords: falls, geriatrics, intracranial bleeding

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Predictors of appropriate hospitalization in elderly patients

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Introduction: Admission decisions in older patients are often difficult. Our objectives were to identify clinical predictors of appropriate admission for older patients who attend the emergency department (ED). **Methods:** Administrative data were gathered on all Calgary ED patients > 75 years old who were treated during 2017. We considered the following events indicative of appropriate admission: an index hospitalization lasting > 72 hours, the need for ICU or CCU care, and 30-day death or readmission. Multivariable logistic regression was used to determine the association of the following potential predictors with appropriate admission: age, sex, EMS arrival, ILI symptoms, living situation (independent, homecare dependency or facility), acuity level, chief complaint, vital signs, need for IV fluid bolus ($> 1L$), serum sodium, potassium, creatinine, hemoglobin, and advanced directive care level (comfort, medical, resuscitation, unspecified).

Results: We studied 38866 older patients who were 55.9% female with a mean age of 84. Most (69%) lived independently, with 17% in a facility and 14% homecare dependent. Overall, 16,992 (43.7%) were admitted at their index visit and 17,340 had an outcome event, including index hospitalization > 72 hours (N = 13,623, 35%), ICU care (352, 0.9%), CCU care (447, 1.2%), or 30-day death (2,241, 5.8%) or readmission (3,964 10.2%). Patients with appropriate admission events were more likely to have an advanced directive (80.7% v. 7.8%), triage hypoxia (30.5% v. 9.2%), EMS arrival (73% v. 48%), facility or homecare dependency (50% v. 15%), or to have a complaint of dyspnea (20.4% v. 8.6%), weakness (9.1% v. 3.8%) or altered mentation (8.8% v. 2.8%). Multivariable modeling showed that the strongest predictors of appropriate admission (adjusted odds ratio) were any advanced directive (OR = 30), need for IV bolus (OR = 1.67), homecare dependency (OR = 1.65), triage hypoxia (OR = 1.63), and a chief complaint of altered mentation (OR = 1.72), weakness (OR = 1.52) or dyspnea (OR = 1.25). **Conclusion:** The presence of an advanced care directive is strongly associated with appropriate admission in older ED patients. Other significant