

LO14

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

LO15

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

LO16

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

determinants include homecare dependency, EMS arrival, hypoxia or dyspnea, IV bolus and weakness or altered mentation. Age, sex, acuity, vital signs and laboratory findings were weak predictors.

Keywords: emergency, geriatric, outcomes

LO17

Barriers and enablers that influence guideline-based care of geriatric falls patients presenting to the emergency department

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Introduction: Geriatric patients commonly present to the emergency department (ED) after a fall. Unfortunately, recent evidence suggests that ED physicians are poorly adherent to published ED-specific geriatric falls guidelines. This study applied a theoretical domains framework (TDF)-driven approach to systematically investigate barriers and enablers in the provision of guideline-based care to older patients presenting to the ED with a fall. **Methods:** From June to September 2017, semi-structured interviews of staff ED physicians practicing in Ontario, Canada were conducted and analyzed. An interview guide based on the TDF was used to capture 14 domains that may influence provision of guideline-based care. Interview transcripts were analyzed, and specific beliefs were generated by grouping similar responses. Relevant domains were identified based on frequencies of beliefs, existence of conflicting beliefs, and evidence of strong beliefs that would influence provision of guideline-based care. **Results:** Eleven interviews were conducted with practicing ED physicians. Thirty specific belief statements across 13 different TDF domains (all except Optimism) were identified as relevant. Overall, Ontario ED physicians are supportive of providing guideline-based care and believe it would lead to better outcomes for geriatric falls patients. Important barriers include knowledge, skills, time and workload constraints, and inconsistent allied health support. **Conclusion:** This study identified important barriers and enablers to provision of guideline-based care in geriatric ED falls patients. These results will help guide implementation of guidelines nationally and internationally, with a focus on improved knowledge dissemination, implementation of training interventions, and improvements in allied health coverage and supports.

Keywords: falls, geriatrics, guidelines

LO18

The effectiveness of parenteral agents to reduce relapse in patients with acute migraine in emergency settings: a systematic review

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Introduction: Although a variety of parenteral agents exist for the treatment of acute migraine, relapse after an emergency department (ED) visit is still a common occurrence. The objective of this systematic review was to update a previous review examining the effectiveness of parenteral agents for the treatment of acute migraine in the ED or equivalent acute care setting; our review focused on those studies aiming a reduction in relapse after an ED visit. **Methods:** A comprehensive search of 10 electronic databases and grey literature was conducted to identify comparative studies to supplement the previous systematic review. Two independent reviewers completed study selection, quality assessment, and data extraction. Any discrepancies were

resolved by third party adjudication. Relative risks (RR) with 95% confidence intervals (CIs) were calculated using a random effects model and heterogeneity (I²) was reported. **Results:** Titles and abstracts of 5039 unique studies were reviewed, of which, 51 studies were included. Sixty-four studies from the original review were included, resulting in a total of 115 included studies. Relapse was reported in 44 (38%) included studies and occurred commonly in patients receiving placebo or no interventions (median = 39%; IQR: 14%, 47%). Overall, no differences in headache relapse were found between patients receiving sumatriptan or placebo (RR = 1.09; 95% CI: 0.55, 2.17; I² = 93%; n = 8). Conversely, patients receiving neuroleptic agents experienced fewer relapses compared to placebo (RR = 0.27; 95% CI: 0.12, 0.58; I² = 0%; n = 3); however, patients receiving neuroleptics reported an increase in adverse events (RR = 1.87; 95% CI: 1.17, 3.00; I² = 0%; n = 3). Compared to placebo, patients receiving dexamethasone were less likely to experience a headache recurrence (RR = 0.71; 95% CI: 0.53, 0.95; I² = 60%, n = 9); however, no differences were found in reported adverse events (RR = 1.09; 95% CI: 0.81, 1.47; I² = 0%; n = 3). **Conclusion:** Relapse is a common occurrence for patients with migraine headaches. This review found patients receiving neuroleptics or dexamethasone experienced fewer headache recurrences. Conversely, triptan agents appear to have minimal effect on reducing the risk for headache recurrence following discharge from an acute care setting. Limited available data on adverse events is an important limitation to inform decision-making. Guidelines should be revised to reflect these results.

Keywords: migraine, parenteral agents, relapse

LO19

Should emergency physicians bother offering triptans to patients with acute migraine? A systematic review of parenteral agents

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Introduction: Acute migraine headaches are common causes of presentation to the emergency department (ED). There is great variability in the efficacy of the available parenteral agents to manage pain, though triptans are among the recommended treatments. The objective of this systematic review was to update a previous review examining the effectiveness of parenteral agents for the treatment of acute migraine in the ED or equivalent acute care setting; our review examined pain management in emergency settings and assessed the effectiveness of triptan agents. **Methods:** A comprehensive search of 10 electronic databases and grey literature was conducted to supplement the previous systematic review. Two independent reviewers completed study selection, quality assessment, and data extraction. Any discrepancies were resolved by third party adjudication. Pain scale scores were analyzed using standardized mean difference (SMD) with 95% confidence intervals (CIs) calculated using a random effects model; heterogeneity (I²) was reported. **Results:** Titles and abstracts of 5039 unique studies were reviewed, of which, 51 studies were included. Sixty-four studies from the original review were included, resulting in a total of 115 included studies. Pain was measured within the ED or equivalent acute care setting using a variety of pain scales, most commonly the 0-10 cm or 100 mm visual analog scale. Four studies compared pain scores between patients receiving sumatriptan vs. other agents, of which, patients receiving sumatriptan reported higher pain scale scores (SMD = 0.53; 95% CI: 0.04, 1.02; I² = 80%). In particular, patients receiving sumatriptan reported higher