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The impact of high performance physician training on resident wellness and clinical performance

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Introduction / Innovation Concept: There are numerous research studies in the medical literature, which demonstrate how the experience of a medical residency can contribute towards burnout. The escalating performance pressures and expectations during residency training have the potential to negatively impact upon physician health and clinical performance. The purpose of this prospective cohort study was to test the effectiveness of the High Performance Physician (HPP) program among General Surgery residents at the University of Manitoba with regard to burnout and clinical performance. **Methods:** This program was delivered over a 9-week period. All 26 residents were asked to complete the Maslach Burnout Inventory - Human Services Survey (MBI-HSS). Each resident then participated as the team leader for a 15-minute trauma resuscitation simulation. Three attending physicians from Surgery & Emergency Medicine assessed resident performance and ability to manage work-based stressors. Following the simulation, each resident received a debrief interview. Once the HPP curriculum had been completed, residents took part in a second high fidelity simulation session and again completed the MBI-HSS. **Curriculum, Tool, or Material:** The HPP program offered through the Department of Emergency Medicine (EM), is a performance enhancement based curriculum. It is designed to equip physicians with mental skills to help optimize focus, arousal control, stress management, communication, and teamwork. Further, to utilize these skills to cope and respond more effectively to the inherent performance pressures that may present within one's area of specialization. **Conclusion:** The Emotional Exhaustion domain of the MBI-HSS demonstrated a statistically significant decrease. The other domain scores were not statistically significant. Simulation domain scores did not demonstrate a statistically significant difference in performance between the pre- and post-HPP curriculum simulation sessions. A summative content analysis of the interview data demonstrated that residents believed internal barriers to situational awareness were the most significant impact on performance. Further study is required to determine if differences are seen in long-term follow-up.

Keywords: innovations in EM education, resident wellness, clinical performance

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Incidence and characteristics of ventricle fibrillation in patients with ST-elevation myocardial infarction in a suburban pre-hospital setting

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Introduction: *Background:* Ischemic ventricular fibrillation (VF) is highly related to ST elevation myocardial infarction (STEMI). Pre-hospital STEMI patients have been shown to also develop VF during ambulance transport. However, there is limited literature exploring the characteristics of this specific population of VF. *Objective:* To determine the incidence of pre-hospital VF, and evaluate some demographic and electrocardiogram (ECG) characteristics of STEMI patients having VF while transported by ambulance in a Quebec suburban pre-hospital setting. **Methods:** A retrospective study from 8th August 2006 to 6th December 2015 of 937 STEMI patients transported by ambulance in the Chaudière-Appalaches region, south of Quebec City. Destination for

treatment was either Catherization Laboratory (CL) or the nearest Emergency Department (ED) for reperfusion treatment and was mainly based upon a maximum transport time of 60 minutes, from the first confirmed STEMI-ECG to the CL. Demographics and ECG characteristics were extracted from the patients care records. SPSS-20 was used for descriptive statistics. **Results:** 937 patients (259 women & 678 men) diagnosed with STEMI were included in the study. Patients were regrouped in V1-V4 leads STEMI (336; 35.9%) and in other leads STEMI (651; 64.1%). 52 (5.55%) of all STEMI patients had FV during ambulance transport. There were 10 women (27.4%) and 42 men (72.6%). Of these, 28 had V1-V4 STEMI (28/336; 8.33%) while 24 had other leads STEMI (24/651; 3.69%). Relative risk of FV is higher (225%) with V1-V4 STEMI compared to other leads STEMI. Regarding age groups, patients from 60 to 70 years old represent 38.4% (20/52) of FV for 25.7% (241/937) of STEMI patients while those over 80 years old had 3.85% (2/52) of FV, but were 17% (159/937) of all STEMI patients. Men seem also more at risk for FV (16/20) especially between 60 and 70 years old compare to other age group. **Conclusion:** In this suburban area, VF occurred in 5.55% of STEMI patient's transported by ambulance. STEMI patients over 80 years old had a low rate of FV. Being a man, 60 to 70 years old, with a STEMI located in V1-V4, seems to be associated with a higher risk of VF. More studies are needed to confirm these results and explore other characteristics associated to pre-hospital VF.

Keywords: pre-hospital ventricular fibrillation, electrocardiogram (ECG), myocardial infarction

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Emergency department falls risk management screening tool comparison

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Introduction: Emergency Department (ED) fall risk screening has been newly implemented in Alberta based on Accreditation Canada requirements. Two existing inpatient tools failed to include certain ED risk conditions. One tool graded unconsciousness as no risk for falling, and neither considered intoxication or sedation. This led to the development of a new fall risk management screening tool, the FRM (Tool1). This study compared Tool1 with inpatient utilized Schmid Fall Risk Assessment Tool (Tool2) and the validated Hendrich II Fall Risk Model (Tool3). **Methods:** Patients (≥ 17 years old) in a tertiary care adult ED with any of the following; history of falling in the last 12 months, elderly/frail, incontinence, impaired gait, mobility assist device, confusion/disorientation, procedural sedation, intoxication/sedated, or unconscious were included. Forms were randomized to score patients using different paired screening tools: Tool1 paired with either Tool2 or Tool3. Percent agreement (PA) between the tools based on identification of a patient at either risk/no risk for falling; higher PA indicating more tool homogeneity. **Results:** A total of 928 screening forms were completed within our 8-week study period; 452 and 443 comparing Tool1 to Tool2 and Tool1 to Tool3, respectively. Thirty-two forms included only Tool1 scores, excluding them from comparative analysis. The average patient age ($n = 895$) was 64.8 ± 21.4 years. Tool1 identified 66.4% of patients at risk, whereas Tool2 and Tool3 identified only 19.2% and 31.4%, respectively. Tool1 and 2 had a PA of 50.2%, whereas Tool1 and Tool3 had a PA of 65.9%. **Conclusion:** The FRM tool had higher agreement with the validated assessment tool, identifying patients at risk for falling but better identified patients presenting with intoxication, need for procedural sedation and unconsciousness. The other tools generally miss these common ED conditions, putting

these patients at risk. Validation and reliability assessments of the FRM tool are warranted.

Keywords: fall risk, risk management, emergency nursing

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Developing and piloting a nurse-initiated falls risk screening tool in the emergency department

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Introduction / Innovation Concept: With aging, increasing complexity, and prolonged emergency department (ED) stays, patient falls are an increasing problem. Accreditation Canada recently listed falls risk management (FRM) as a required operational practice (ROP). The University of Alberta ED had no screening tool or education program specific to falls. Gaps in identifying patients with altered consciousness, intoxication, or are undergoing procedural sedation were noted in the Alberta Health Services (AHS) recommended tool. This gap led to the development piloting of an ED specific FRM screening tool. **Methods:** A literature review was completed to assess current fall assessment tools and their applicability to the ED. No ED specific tools were identified leading to the development of the FRM tool. Prior to the FRM tool being piloted, nursing staff were asked to respond to a voluntary survey on their perceived knowledge of falls management followed by a survey testing their actual knowledge. They were then educated on the FRM and protocol through in-services, power point presentations, and fact sheets. A post education knowledge survey was then sent out. Multidisciplinary working groups provided feedback throughout the pilot, resulting in modifications prior to final implementation. **Curriculum, Tool, or Material:** The FRM tool consists of 10 variables with a maximum score of 20. Variables included are: falls in the last 12 months? Mechanical (1), Physiological (2), Multiple (3); age ≥ 70 or frail (2); mobility assist device (1) confusion or disorientation (5); impaired gait (1); incontinence (1); intoxicated (3); procedural sedation (3); and unconscious (5). All except for the last 3 variables were adapted from inpatient risk tools. Patients were categorized as low (1-2 points), moderate (3-4 points), or high risk (5+ points) and those scoring ≥ 3 had a safety protocol implemented. The survey regarding perceived knowledge for management of falls led to an average score of 86.6% ($n = 46$). When tested on their actual knowledge they scored 48.8% ($n = 29$). Following training on the FRM tool and protocol, the actual knowledge of 18 respondents averaged 83%. **Conclusion:** The FRM screening tool has been implemented and a comparative study looking at ED risk predictability matched to existing falls risk scores. Based on research findings the FRM will be considered for a provincial implementation.

Keywords: fall risk, risk prevention, nurse screening

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Characterizing how institutionalized and community-dwelling elderly patients use emergency department services in Regina, Saskatchewan

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Introduction: In light of recent local initiatives aimed at improving emergency department (ED) patient flow, we sought to characterize how patients aged 65 and older who reside in long term care (LTC) facilities utilize the services of the EDs in Regina, Saskatchewan as compared to an age-matched comparison of community dwelling individuals. **Methods:** A retrospective chart review was performed with a

convenience sample of the first 50 patients who presented to each ED at both hospitals in Regina starting January 1, 2012 for each population. Two separate patient populations were included: those who reside in the health region run LTC facilities and those who live in the community. We abstracted data from a variety of different clinical, demographic and administrative parameters. **Results:** The charts of 100 patients were reviewed for the LTC population (54 females, mean age 82.6) and 99 patients for the community dwelling population (55 females, mean age 77.3). The CTAS distribution for the LTC patients was found to be CTAS 1: 5%, CTAS 2: 9%, CTAS 3: 43%, CTAS 4: 33% and CTAS 5: 10%. For the community dwelling individuals, the distribution was CTAS 1: 1%, CTAS 2: 21%, CTAS 3: 44%, CTAS 4: 22%, CTAS 5: 10%. This is a significantly different distribution ($p = 0.047$). From the LTC population, we found that 50% of patients were admitted, with 46% being discharged and 4% leaving without being seen. Furthermore, we also noted that 75% of patients were brought to the ED by EMS. From the community dwelling population, we noted that 43% of patients were admitted, with 55% being discharged and 1% leaving without being seen. This population used EMS services 41% of the time. With respect to length of stay, LTC patients had a mean duration of 5.7 (± 4.3 hours) compared to 4.8 (± 4.0) hours for the non-LTC population ($p = 0.111$). **Conclusion:** Our findings suggest that the highest volume of acuity for the LTC patients falls within the CTAS 3 or 4 categories whereas there is a higher proportion of CTAS 2 acuity patients in the community dwelling population. Exactly half of our LTC sample was admitted as compared to 43% of the community population. The LTC population also required EMS services for a considerably higher proportion of their presentations to the ED (75% compared to 41%). It is our intent that the findings of this study will help guide future quality improvement initiatives.

Keywords: geriatrics, long term care, quality improvement

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Evaluating barriers to clinical decision rule integration: a qualitative analysis

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Introduction: Clinical decision rules for computed tomography (CT) ordering in pulmonary embolism and mild traumatic brain injury have been shown to be under-used in clinical practice. Current literature does not explain why these validated decision rules continue to be under-used despite evidence of inappropriate use and increased costs. To better evaluate potential barriers to their use, qualitative methods involving focused interviews were conducted amongst emergency department (ED) physicians. **Methods:** Physicians were recruited via a brief presentation at Calgary Zone ED rounds. Ten attending and resident physicians (4 female, 6 male) were interviewed. Questions were designed to evaluate potential barriers to the integration of decision rules into the computerized order entry system. Interviews were audio-recorded and transcribed manually. A high-level thematic analysis was conducted to draw primary themes from open-ended questions, and responses were totaled for closed-ended questions. **Results:** Emerging themes suggest concerns surrounding timing of rule application in relation to test ordering, patient influences on ordering, and overuse reporting. All 10 physicians believed decision rules for CT ordering play a large role in the ED, and 8 were in favor of integration into the order entry system. However, over half expressed concern, noting that their thought process begins before order entry. A majority prioritized shared decision-making with patients. However, 8 indicated that patient expectations influence their ordering. A majority agreed that there is CT overuse in the ED, but many were hesitant in concluding that overuse