

increased the proportion of ECGs performed within 20 minutes of ED arrival in these patients.

Keywords: chest pain, time-to-electrocardiogram, triage

MP40

What are the factors contributing to medico-legal risk of procedural interventions performed by physicians practicing emergency medicine?

K. Lemay, P. Finestone, R. Liu, MCS, R. De Gorter, BSc, L. Calder, MD, MSc, The Canadian Medical Protective Association, Ottawa, ON

Introduction: Physicians who practice emergency medicine (EM) often perform procedural interventions, which can occasionally result in unintended patient harm. Our study's objective was to identify and describe the interventions and contributing factors associated with medico-legal (ML) cases involving emergency physicians performing procedural interventions. **Methods:** The Canadian Medical Protective Association (CMPA) is a not-for-profit, ML organization which represented over 99,000 physicians at the time of this study. We extracted five years (2014-2018) of CMPA data describing closed ML cases involving procedural interventions (e.g. suturing, reducing a dislocated joint) and excluding interventions related to pharmacotherapy (e.g. injection of local anesthetic), diagnosis (electrocardiograms) and physical assessments (e.g. ear exams), performed by physicians practicing EM. We then applied an internal contributing factor framework to identify themes. We analysed the data using descriptive statistics. **Results:** We identified 145 cases describing 145 patients who had 205 procedures performed in the course of their EM care. The three most common interventions were orthopedic injury management (47/145, 32.4%), wound management (43/145, 29.7%), and Advanced Cardiac Life Support (24/145, 16.6%). Out of 145 patients, 93.8% (136/145) experienced a patient safety event, and 55.9% (76/136) suffered an avoidable harmful incident. One quarter of patients suffered mild harm (34/76, 25.0%), 18.4% of patients died, 14.5% suffered severe harm, and 13.2% moderate harm. Peer experts were critical of 86/145 cases (59.3%) where the following provider contributing factors were found: a lack of situational awareness (20/68, 29.4%), and deficient physician clinical decision-making (54/68, 79.7%). Clinical decision-making issues included a lack of thoroughness of assessment (33/54, 61.1%), failure to perform tests or interventions (21/54, 38.9%), and a delay or failure to seek help from another physician (17/54, 31.2%). Peer experts were also critical of 48.8% of cases containing team factors (42/86) due to deficient medical record keeping (26/42, 61.9%), and communication breakdown with patients or other team members (25/42, 59.5%). **Conclusion:** Both provider and team factors contributed to ML cases involving EM physicians performing procedural interventions. Addressing these factors may improve patient safety and reduce ML risk for physicians.

Keywords: emergency physicians, medico-legal, procedural interventions

MP41

Crowdsourcing to save lives: A scoping review of bystander alert technologies for out-of-hospital cardiac arrest

A. Valeriano, BA, BSc, S. Van Heer, BSc, S. Brooks, MD, MHSc, F. de Champlain, MD, B.Eng, Queen's University, Kingston, ON

Introduction: Out-of-hospital cardiac arrest (OHCA) constitutes a significant global health burden, with a survival rate of only

10-12%. Early intervention is vital but limited by ambulance response times, low rates of bystander assistance, and access to AEDs. Smartphone technologies have been developed that crowdsource willing volunteers to nearby OHCA in order to initiate resuscitation prior to ambulance arrival. We performed a scoping review to map the available literature on these crowdsourcing technologies and compared their key operational features. **Methods:** A search strategy was developed for five online databases: Medline, Cochrane, Embase, and Web of Science, as well as Google Scholar. We searched for primary studies and grey literature describing mobile phone technologies that alerted users of nearby cardiac arrests in the community. Two reviewers independently screened all articles and extracted relevant study information. Subsequently, we performed a search of the Google and Apple app stores, a general internet search, and consulted experts to identify all available technologies that might not be described in literature. We contacted developers for information on technology use and specifications to create a detailed features table.

Results: We included 72 articles examining bystander alerting technologies from 15 countries worldwide, owing to the increasing importance of this topic. We identified 25 unique technologies, of which 18 were described in the included literature. Technologies were either text message-based systems (n = 4) or mobile phone applications (n = 21). Most (23/25) used global positioning systems to direct bystanders to victims and nearby AEDs. Response radii for alerts varied widely from 200m to 10km. Some technologies had advanced features such as video-conferencing with ambulance dispatch and detailed alert settings. Not all systems required volunteers to have first aid training. There were 18 studies examining effects on bystander intervention, all of which showed significant improvements using the technologies. However, only six studies assessed impact on survival outcomes. Key barriers discussed included false positive alerts, legal liability, and potential psychological impact on volunteers.

Conclusion: Our review provides a comprehensive overview of crowdsourcing technologies for bystander intervention in out-of-hospital cardiac arrest. Future work in this growing field should focus on survival outcomes and methods of addressing barriers to implementation.

Keywords: crowdsourcing, out-of-hospital cardiac arrest, resuscitation

MP42

Evaluating clinical and situational factors related to the likelihood of physician authorization for time-sensitive procedures during mandatory paramedic patches

D. Kelton, BSc, MD, S. Doran, BA, BSc, MD, BEd, M. Davis, MD, MSc, K. Van Aarsen, MSc, J. Momic, BSc, Western University, London, ON

Introduction: Delegation of controlled medical acts by physicians to paramedics is an important component of the prehospital care framework. Where directives indicate that physician input is needed before proceeding with certain interventions, online medical control (a "patch") exists to facilitate communication between a paramedic and a Base Hospital Physician (BHP) to request an order to proceed with that intervention. The clinical and logistical setting will contribute to the decision to proceed with or withhold an intervention in the prehospital setting. The aim of this study was to examine the impact of various clinical and situational factors on the likelihood of a patch request being granted. **Methods:** Prehospital paramedic calls that included a mandatory patch point (excluding requests exclusively for