

(EMS) transport. **Methods:** A retrospective cohort study with suspected STEMI patients monitored with prehospital serial ECGs was performed from August 2006 to December 2013. The data was extracted from UCCSPU clinical databases and verified by an emergency physician supervisor. During EMS transport, the serial ECG monitoring system automatically produced and transmitted every 2 minutes a 12-lead ECG without artefacts. STEMI criteria were based on the Third Universal Definition of Myocardial Infarction. Dynamic ECG change was defined as an ST-segment elevation or depression that meets diagnostic criteria (eg. initial non STEMI (NSTEMI) changing to STEMI and vice versa). **Results:** Among the 752 patients identified with suspected STEMI, 728 (96.8%) were included in the study due to missing data. The majority (614/728; 84.3%) had a consistent ST segment without significant dynamic changes throughout transport, of which 521 were identified as STEMI and 93 as NSTEMI. The remaining 114 patients (15.7%) had dynamic ECG changes: 41 (36%) evolved from NSTEMI to STEMI, 40 (35.1%) changed from STEMI to NSTEMI, and 33 (28.9%) had more than one dynamic ST-segment change. Overall, 59 patients (8.1%) had a final STEMI ECG diagnosis after an initial NSTEMI ECG interpretation. **Conclusion:** In this study, the serial ECG system enabled the remote diagnosis of STEMI in 8.1% of patients during EMS transport following an initial NSTEMI diagnosis. Serial monitoring of dynamic changes can allow for more rapid diversion to primary percutaneous coronary intervention facilities, potentially improving patient outcomes. Further studies are needed to evaluate the clinical impact, and costs and benefits of implementing this technology.

Keywords: ECG interpretation, STEMI, emergency medical services (EMS)

MP029

Mobilizing citizens, decision-makers and healthcare professionals to find solutions for improving emergency care in a remote Northern emergency department: a pilot study

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Introduction: Our national study of rural EDs showed they have limited access to CT scans, ICU, and most specialties, while Level 1 and Level 2 trauma centers are on average 300 km away. However, equivalent information on Northern/remote EDs is scarce. **Objectives:** This pilot study aimed to: 1) describe local access to services; and 2) mobilize citizens, decision-makers and healthcare professionals to envisage solutions to improving emergency care in a Northern/remote hospital. **Methods:** This descriptive, qualitative study was performed in a northern ED in Quebec. The head nurse received a prevalidated questionnaire about access to specific services, ED and patient characteristics (Objective 1). Focus groups (5) and individual interviews (11) were conducted with citizens/patients, decision-makers, physicians, nurses, paramedics, pharmacists, and mental health workers (Objective 2). Descriptive statistics are reported as means, medians and percentages for Objective 1. A thematic analysis was conducted for Objective 2. **Results:** **Objective 1:** The city (population 2875) is a mining community 962 km from Quebec City. The 2010 annual ED census was 6692. Proportions of patient visits at triage levels 1-5 were 0.2%, 3.2%, 13.4%, 25.4% and 56.7% respectively. The ED was staffed by one physician and two nurses per shift. The hospital had 24/7 access to basic X-ray and laboratory but no local access to speciality care, ICU, CT scan or ultrasound, with nearest services 28 km away. **Objective 2:** Analysis of qualitative data highlighted concerns for personal safety; telecommunication problems; lengthy transports; limited access to in-service training, advanced imaging, and consultants; and recruitment and retention difficulties.

Solutions included pre-hospital training, telemedicine, protocols, and networking with academic centers/medical schools, North Shore colleagues, and Labrador City Hospital. **Conclusion:** This isolated northern ED has limited access to services. Valuable qualitative information obtained enabled us to better understand the challenges and explore solutions towards improving Northern/remote emergency care.

Keywords: Northern emergency department, improving emergency care, mobilization

MP030

Problems in paramedic-physician telecommunication

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Introduction: Clear paramedic-physician telecommunications (patches) are critical in systems utilizing on-line medical control. In systems using extensive medical directives individual paramedics patch infrequently. Investigations of specific problem calls indicated that communication problems were more common than believed. Existing literature on this topic is sparse. This project is a quality assurance exercise undertaken to understand the extent and nature of problems in paramedic-physician telecommunications. **Methods:** Retrospective analysis of anonymized transcriptions made from MP3 audio files recorded as part of normal operating procedures by the Central Ambulance Communication Centre during January-March 2014. All calls where telecommunication occurred between paramedics from 4 ambulance services and base hospital physicians providing on-line medical oversight during ambulance calls were included. Transcripts were read multiple times and data extracted onto spreadsheets for frequency analysis. Further thematic framework analysis of emergent themes was done. **Results:** All 42 patches were transcribed and used for analysis. 36 (85.7%) were for termination of resuscitation orders, 4 (9.5%) were for advice, and 2 (4.8%) were for orders not covered by medical directives. Communication problems were identified in 40 (95.2%) patches. Most had multiple problems. These included disconnections (23.8%), difficulty hearing one another (40.5%) - indicated by phrases such as "sorry?" "what?", "I can't hear you" - or caused by individuals interrupting each other (83.3%), and talking simultaneously (47.6%). Signaling the end of "talk turns" - such as "10-4" or "over" - was never used. Instead, terms like "yah" and "OK" were used. When communication went awry, time was spent trying to repair the mis/poor communication. This led to repeating information or attempting to 'sell' the case by providing information unnecessary for decision making - such as during a request for termination of resuscitation, "there is vomit on the floor". **Conclusion:** Paramedic-physician telecommunication problems were extremely common. They involved technical (mechanical problems) and human factors (disorganized radio 'technique'). The high incidence of telecommunication problems identified is concerning. Critical clinical decisions (e.g. ceasing resuscitation) depend on clear communication. Further study of these issues is warranted.

Keywords: telecommunication, paramedic, patch

MP031

Synovial fluid analysis in the diagnosis of septic arthritis: comparing local data to the literature

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Introduction: A hot, painful, swollen joint is a common presentation to the emergency department. Of the potential etiologies, septic arthritis (SA) is the most devastating. Prompt diagnosis and treatment are