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Communication interruptum: cellphone technology problems in paramedic-physician communication

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Introduction: Approximately 15 years ago cell phones replaced portable VHF radios as the means of communication between paramedics and base hospital physicians. Cellphones, like VHF radio, do not allow voice transmission and reception to occur simultaneously. Radio use requires a learned technique to signal the end of each speaker's turn talking. These techniques are not used in normal cellphone conversation. Poor cellphone reception and poor technique result in breakdowns in communication. The literature about paramedic-physician telecommunication is almost nonexistent. There is an extensive literature in other industries, such as aviation, concerning problems in radio communication. This literature predicts that communication breakdowns are common and have critical consequences. We sought to determine how frequently problems attributable to cell phone technology arose in paramedic-physician communication. **Methods:** We conducted a retrospective analysis of all patch calls between physicians and paramedics from 4 municipal paramedic services from January 01-December 31, 2014. MP3 audio files, recorded during normal operating procedures by the Central Ambulance Communication Centre, were anonymized and transcribed. Transcripts were read multiple times by the authors and analyzed using mixed methods-qualitative thematic framework analysis and quantitative descriptive statistics. **Results:** 161 calls were identified. 155 tapes were usable for analysis. 127 (81.9%) patches involved termination of resuscitation orders, 28 (19.1%) were for advice or other orders. The data set consisted of 567 pages of transcripts. Communication problems were identified in 138 (89.0%) patches. Most had multiple problems. Technical problems included disconnections (13.5%), or difficulty hearing (56.8%)-indicated by phrases such as "what?", "I can't hear you". Disorganized cell phone technique was common-individuals interrupted each other (34.2%), and talked simultaneously (54.8%). Signalling the end of "talk turns"-using terms such as "10-4" or "over"-was never used. **Conclusion:** In addition to technical problems (poor transmission, disconnections), disorganized cell phone 'technique' caused a high incidence of communication problems. This is concerning because critical clinical decisions (e.g. ceasing resuscitation) depend on clear communication. Understanding the limitations of cellphone technology might improve communication.

Keywords: paramedic, cell phone technology, communication

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Do biomarkers need clinical attention among pre-frail injured seniors seen in the ED

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Introduction: Frailty is associated with functional decline and physiological impairments in seniors with minor injuries. Serum biomarkers have also been suggested as potential markers of these impairments in clinical studies. However, no study has addressed the usefulness of serum biomarkers among pre-frail seniors consulting emergency departments (ED) in order to detect these impairments.

Objectives: The purpose of the present study was to explore the association between several serum biomarkers and the frailty status of seniors seen in ED for a minor injury who are at risk of functional decline and 2) assist professionals in clinical decisions while identifying frail seniors in whom interventions should be started in order to prevent

potential functional decline. **Methods:** This cross-sectional study includes 190 seniors retrieved from the larger CETI cohort and discharged home from 4 EDs after treatment of minor injuries. Their frailty status was measured by the Canadian Study of Health & Aging-Clinical Frailty Scale (CSHA-CFS). Then, patients were classified as "Robust" (CHSA-CFS levels 1 and 2) vs. "Pre-frail/Frail" (CHSA-CFS levels ≥ 3). Biomarkers (Albumin, Creatinine, C-reactive protein (CRP), Vitamin D, Ferritin, Glucose and Insulin-Growth Factor (IGF-1)) were obtained from blood samples. "Normal" vs. "Impaired" (low and/or high) clinical threshold values were used for statistical analyses. **Results:** The proportion of patients with clinically high creatinine levels ($>105 \mu\text{mol/L}$ for male and $>85 \mu\text{mol/L}$ for female) was higher in Pre-frails/Frills when compared to Robusts (P -value = 0.01). Also, regarding IGF-1, we observed that the proportion of patients with lower IGF-1 levels ($<50 \mu\text{g/L}$) was higher in patients showing Pre-frail/Frail status (P -value = 0.01). Finally, a significant correlation was found between frailty status and blood glucose ($r = 0.22$; P -value = 0.02) whereas a tendency was noted for CRP level ($r = 0.14$; P -value = 0.1). **Conclusion:** When compared to Robust seniors, Pre-frail/Frail individuals presenting to EDs tend to have physiological dysregulations that may help detect pre-frail status in community-dwellers. Larger prospective studies are needed to specify the usefulness and clinical implications of frailty biomarkers in the continuum of acute elder care.

Keywords: frailty, biomarkers, injury

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EMS boot camp: a real-world, real-time educational experience for emergency medicine residents

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Introduction/Innovation Concept: In 2014, Eastern Ontario paramedic services, their medical director staff and area community colleges developed an EMS Boot Camp experience to orient Queen's University and the University of Ottawa emergency medicine residents to the role of paramedics and the challenges they face in the field. Current EMS ride-alongs and didactic classroom sessions were deemed ineffective at adequately preparing residents to provide online medical control. From those early discussions came the creation of a real-world, real-time (RWRT) educational experience. **Methods:** Specific challenges unique to paramedicine are difficult to communicate to a medical control physician at the other end of a telephone. The goal of this one-day educational experience is for residents to gain insight into the complexity and time sensitive nature of delivering medical care in the field. Residents are immersed as responding paramedics in a day of intense RWRT simulation exercises reflecting the common paramedic logistical challenges to delivering patient care in an uncontrolled and dynamic environment. **Curriculum, Tool, or Material:** Scenarios, run by paramedic students, are overseen by working paramedics from participating paramedic services. Residents learn proper use of key equipment found on an Ontario ambulance while familiarize themselves with patient care standards and medical directives. Scenarios focus on prehospital-specific clinical care issues; performing dynamic CPR in a moving vehicle, extricating a bariatric patient with limited personnel, large scale multi-casualty triage as well as other time sensitive, high risk procedures requiring online medical control approval (i.e. chest needle thoracostomy). **Conclusion:** EMS Boot Camp dispels preconceived biases regarding "what it's really like" to deliver high quality pre-hospital clinical care. When providing online medical control in the