

June 2016

Abstracts from the 2016 EMS Gathering

Conference abstracts for oral and poster presentations at the EMS Gathering, Killarney, Ireland, June 8th to 10th 2016.



Recommended Citation

Individual abstracts: Surname Initial. Abstract Title. *Irish Journal of Paramedicine*. 2016 Jun; 1(S1)

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Abstracts from the EMS Gathering, Killarney, Ireland, June 8th-10th, 2016

The editorial board of the Irish Journal of Paramedicine (IJP) is honoured to present these abstracts accepted for presentation at the 2016 EMS Gathering, 8th to the 10th of June 2016 in Killarney, Ireland. As part of our commitment to furthering the profession of paramedicine, and encouraging future development of professional standing, we publish this special supplement containing the selected abstracts.

These abstracts represent academic dedication, intellectual discovery, enthusiasm and for some, a foray into a new territory of research and academia. We are grateful for each and every one of these authors' commitment to the advancement of our profession. We are privileged to publish these brief summaries of some of the novel and exciting research our colleagues are undertaking. Abstracts were received from several countries around the world, including Ireland, Canada, Australia, the USA, Croatia and Germany. We are also encouraged to see several abstracts primarily authored by paramedic students. The future is indeed bright.

This year, the EMS Gathering received 21 abstracts for consideration, and accepted 19 of the submissions (90%). One abstract was withdrawn by the authors after acceptance. Each abstract was independently reviewed by six reviewers who were blinded to the identities of the authors. Final determinations for scientific presentation were made by the EMS Gathering Abstract Review Committee. The decisions of the committee were based on the final review scores, with consideration to the time and space available at the meeting for oral and poster presentations.

We present these abstracts as they were received, with minimal copyediting and proofreading. Any questions related to the content of the abstracts should be directed to the authors. Please note that the abstract numbers presented here do not match the presentation numbers at the meeting. Attendees should consult the on-site programme for abstract session content, dates, times and location.

On behalf of the editorial board of the Irish Journal of Paramedicine, the Irish College of Paramedics and the organising committee of the 2016 EMS Gathering, we sincerely thank our colleagues for these valuable contributions, and their continued efforts to expand the knowledge base of paramedicine and prehospital care, ensuring we constantly strive to deliver the best care to our patients, and the best education to our prehospital care

professionals.

Abstract Review Committee

Mr. Alan Batt MSc(c) CCP (*not involved in peer-review*)

Associate Professor Conor Deasy MB BCh BAO PhD

Mr. Kieran Henry MSc AP

Dr. John Glasheen MB BCh BAO MSc

Mr. Brad McArthur BHSc CCP(f)

Dr. Marietjie Slabbert MB ChB MSc

Mr. Darren Figgis MSc AP

In choosing abstracts for the meeting, our goals are logic, fairness, and transparency. We do not believe one form of research is inherently better than another. In the interests of transparency and fairness, we are pleased to share our abstract scoring criteria (Figure 1). Remember, scoring is a judgment call. As an author one is welcome to use the criteria to score one's own abstract, but this won't change how the reviewers score the abstract on review.

All abstracts were reviewed in a blinded manner. Reviewers indicated if they had any potential COI during the review process (knowledge of the submitting authors or the work of specific abstracts etc.). No conflicts were declared by any reviewer. Abstracts were scored on the content of the abstract, educational value, and quality of the written abstract.

Content of the abstract—scientific accuracy and relevance of the abstract, as described in the outlined headings: Introduction/Background, Objectives, Methods, Results and Conclusion/Discussion.

Education value—what interest and appeal would this abstract hold to EMS Gathering audience. Does it represent a contribution to practice, theory, research or knowledge, and how novel or innovative is this contribution? Is the topic relevant to conference?

Quality of the written abstract—is the abstract self-contained, coherent and readable?

Scores from each reviewer were tallied, and the mean score was calculated for each abstract. Abstracts were then ranked according to mean score. Eight abstracts were selected for oral presentation based on highest mean scores. Other abstracts were ranked in order for poster presentation. A winner and runner-up were selected within oral abstracts and poster abstracts based on mean review scores.

Quality of abstract content / 25	Introduction
	Objectives
	Methods
	Results
	Conclusion
Educational value / 15	Interest and appeal to EMS Gathering audience
	Contribution to practice, theory, research or knowledge
	Novel or innovative contribution, relevant to conference
Quality of written abstract / 10	Self-contained
	Coherent and readable

Figure 1. abstract scoring criteria

Best scoring oral abstract: 2. Leyenaar et al. The SPRRUCE Study: Measuring a Spatial Profile of Risk for Repeated Use of Paramedic Services Following Community Paramedicine Enhancement.

Runner-up: 9. Ward et al. Facilitating Paramedic Continuous Professional Competency: The #IrishEMS chat.

Best scoring poster abstract: 4. Ellis and Ryan. The uptake of online Continuous Professional Competency activity by prehospital care providers.

Runner-up: 15. Gaumont. Understanding pain management in prehospital care: educational aids for the Irish options.

The following standardised abbreviations are used in the abstracts:

ACP	Advanced Care Paramedic
ALS	Advanced Life Support
AP	Advanced Paramedic
BLS	Basic Life Support
CPC	Continuing Professional Competency
ECG	Electrocardiogram
ED	Emergency Department
EMS	Emergency Medical Services
MD	Medical Doctor (Physician)
PCP	Primary Care Paramedic
RN	Registered Nurse

1. Investigating paramedic service use by home care patients

Matthew Leyenaar¹, Andrew Costa¹, Brent McLeod^{1,2}

1. McMaster University, ON, Canada; 2. Hamilton Paramedic Service, ON, Canada.

Background: Community paramedic programs use existing paramedic service personnel in non-emergency capacities with extended scope of practice to improve access to health care services for patients that repeatedly call for assistance. Referral to allied health care services is an important resource that these paramedics use. Conversely,

home care services use DIVERT scores (generated from the interRAI HC) to identify patients at risk for visiting an emergency department (ED). Based on the characteristics of home care patients, it is expected that these patients will use paramedic services to access the ED. Therefore, it is expected that services will benefit from identifying these patients in order to better co-ordinate clinical management.

Objectives: Specifically, this project investigates whether long-stay home care patients who have been assessed to have high DIVERT scores utilized paramedic services within 90 days of assessment, when compared to patients assessed to have low DIVERT scores. This project considers risk factors in home care patients that use paramedic services—either in an emergency or non-emergency capacity.

Methods: Paramedic service records, home care records, and emergency department records provide the necessary data to facilitate this investigation. Prevalence of paramedic service use by home care patients as well as prevalence of patients receiving home care among patients seen by paramedic services will present important baseline information for these service providers. Use of paramedic services will be modelled using logistic regression and survival analysis.

Conclusion: This investigation will have implications pertinent to the collaborative efforts between paramedic services and home care providers to improve care for these individuals.

2. The SPRRUCE Study: Measuring a Spatial Profile of Risk for Repeated Use of Paramedic Services Following Community Paramedicine Enhancement

Matthew Leyenaar¹, Niko Yiannakoulis¹, Michel Ruest², Michael Nolan²

1. McMaster University, ON, Canada; 2. County of Renfrew Paramedic Service, Pembroke, ON, Canada.

Introduction: Geographic evaluation of accessibility to health care services, also known as spatial accessibility, typically generates indices of spatial access that reflect a population's ability to travel to health care resources. Geographic profiling, typically applied within criminology, generates probabilities useful in identifying the location of specific cases. This research draws on both concepts in order to generate spatially defined probabilities of paramedic service use by frequent users.

Methods: Using logistic regression, a model was developed to identify individual level risk factors that predict frequent use patients. The model was tested on independent subsets of data from subsequent years in order to determine its validity. The resulting probabilities generated through the modelling process were aggregated to two different spatial scales to create profiles of community needs. Due to ongoing community paramedic programming within the region of study, the resultant community health profiles serve as an evaluation of the benefit of these programs in these locations. The community health profiles also can be used to assess community level probabilities of patient needs in future

interventions.

Results: The model performed with a receiver operator characteristic area under the curve of 0.876. This performance was 0.866 and 0.874 in the two validation datasets. Other tests of calibration presented similarly accurate results. Therefore, the model was applied to generate spatial profiles of risk for frequent use.

Conclusions: This analysis can serve as a new way to assess spatial accessibility to health care services and identify locations with increased risk of frequent use of paramedic services. While the results are specific to the location of study, the methods of analysis employed as well as the specification of the model may be adapted to other settings. Future work may consider other variables as measures of patient accessibility. The results serve to validate ongoing community paramedic programming as marked decreases in risk were observed in communities where specific interventions occurred.

3. Barriers to effective communications in the Irish prehospital setting: the paramedics perspective.

Neil Coleman¹, Nia Clendennen¹, Crea Carbury¹

1. University College Dublin, Dublin, Ireland.

Background: For most people who access the emergency medical system via 112/999 in Ireland, their first point of contact within the system is often a paramedic or advanced paramedic. The diversity of presenting complaints, coupled with a limited range of diagnostic equipment means that one of the key skills that must be utilised in order to attain accurate and pertinent patient history is the ability to communicate in a clear and easily understandable manner.

Objectives: To assess the perceived barriers to effective communications in the Irish pre-hospital setting, how paramedics perceive their own ability to communicate with patients from the perspective of qualified paramedics, assess the level of communications training received by paramedics, assess the views of paramedics towards formalised communications training and their views as to who is best placed (by profession) to deliver formalised patient communications training.

Methods: A written survey was distributed to four groups of paramedics involved in advanced training programmes (four AP intern classes at different stages of their respective courses, total 78 students). Respondents returned the survey both voluntarily and anonymously. With the exception of length of service, there was no data contained in the study that could potentially identify any respondent.

Results: The majority of respondents feel that they communicate well with patients. The largest barrier to effective communication identified by the group were patients under the influence of an intoxicant. Language barriers were also identified as an issue, however fluency in a second language was low in the sample group. The majority of respondents also stated having received no formal training in patient communications. Majority view was that a formalised course in patient communications would be

beneficial, with opinion being split as to who would be best placed to deliver this type of training.

Conclusion: Initial data would indicate that there is a place for formalised communications training within the prehospital syllabus in Ireland. The question remains as to whether this would be more beneficial at paramedic grade or advanced paramedic grade training.

4. The uptake of online Continuous Professional Competency activity by prehospital care providers

Glen Ellis¹, Grainne Ryan²

1. Dublin Fire Brigade, Dublin, Ireland; 2. National Ambulance Service, Ireland.

Background: The delivery of continuing professional competency (CPC) education to prehospital care providers in Ireland has evolved to include online and social media based activities. Paramedics and other prehospital care providers have also indicated their support for further online and social media based CPC activities. As a result, in June 2014 the O'Brien Institute CPC (OBI-CPC) Nights project was founded. This event aims to provide regular, live online CPC events for Irish prehospital care providers, free for all to attend. The medium for delivery is via a live video feed hosted on YouTube.

Objectives: The purpose of this study is to describe, characterise and evaluate the content of the OBI-CPC Nights project since its formation, and to evaluate the impact and engagement to date.

Methods: Total figures for live attendance at on-site event and at satellite sites were obtained. In addition, total views on YouTube for the recorded event was also obtained. An analytical report for #obicpc was also generated on symplur.com, with a search date from 16th February 2016 (registration date of hashtag) to date, a total period of 6 months. All of these data were combined to generate the results presented.

Results: During the study period (June 2014 - April 2016), eight OBI-CPC nights were conducted. These involved 24 speakers, who spoke on 24 topics, ranging from sepsis to trauma to education. As of March 1st 2016 a total of 505 individuals attended the event live, in-person, with an additional 497 that attended satellite sites, and 2777 have viewed the events on our YouTube channel. The hashtag #obicpc was registered in February 2016, and there have been 226 tweets by 52 users, with a total reach of approximately 162,060.

Conclusion: The results to date indicate that prehospital care practitioners in Ireland are engaging with the concept of live, electronically distributed CPC activities. The OBI-CPC Nights project has been a success to date with sustained growth evident from its inception. *figures to be updated prior to presentation.

5. Clinical Scope of Practice of Select Air Ambulance Paramedics in Germany and USA.

John R. Clark^{1,2}, Jürgen Gollwitzer³

1. *International Board of Specialty Certification;*
2. *Board for Critical Care Transport Paramedic Certification;*
3. *International Association of Flight Paramedics - Germany Chapter*

Objective: The objective of this cross-sectional online survey was to more fully understand the difference in the scope of practice between paramedics practicing in rotor-wing air ambulance programs in Germany versus their USA counterparts and their own expectations regarding their ability to provide optimal patient care.

Methods: An online survey of frontline paramedical staff in Germany and the United States was conducted using SurveyMonkey (SurveyMonkey Inc., Palo Alto, California, USA). Paramedics were asked to respond to eight questions relating to their beliefs and expectations relating to paramedic scope of practice in the air ambulance environment using a four-point Likert scale for each. Descriptive statistics are used to describe responses to survey questions. Tests for trend between nominal and ordinal explanatory variables and ordinal survey responses were performed using chi square statistics.

Results: There were 148 responses to the survey throughout the 1-month study period. Responses were split between German and USA paramedics with 1/3 coming from Germany and 2/3 from the USA. While many similarities exist between the two countries, the scope of practice and the training requirements are vastly different between the German and USA flight paramedic. When responding to questions about special skills and education required for air medical environment, provider beliefs about scope of practice are more closely aligned. Crew configuration (MD versus RN) seemed to play a significant part in the extent of the role of the flight paramedic.

Discussion/conclusions: Respondents to this online survey appear enjoy a broad scope of practice beyond the practice of their ground ambulance counterparts. While a greater sample size and more specific questions would help better define the difference between the German and the USA flight paramedic, the initial questions demonstrated that while practice is similar, the scope of practice between the two countries are significant enough to not allow a 1:1 transfer of paramedic practice from a German program to a USA program, but the survey does demonstrate that collaboration is possible and both groups could benefit from future collaboration to improve the delivery of patient care that the flight paramedic delivers.

6. **Triage in Emergency Department (ED): addressing the most urgent patients through the Emergency Severity Index (ESI) modification.**

Monika Bednarek^{1,2}, Karol Malec², Aleksandra Załustowicz²

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2. *Emergency Department, Emergency and Disaster*

Medicine Trauma Center, University Hospital in Cracow.

Background: The number of patients arriving at EDs increases. Researches show that the number doubles within seven years. The ED of University Hospital in Cracow is a part of the Trauma Center with average patient's flow about 125 people daily and 4 doctors working at once. Doctors report that a growing number of patients is a threat to those who are in serious condition, paying particular attention to the large number of patients appearing even though they do not require emergency service.

Objective: The objective of this study was to vivificate if the ESI modification allows to optimally address the most urgent patients when the increased patients influx exceeds available resources.

Methods: The retrospective study was conducted. Books of reports on patients flow between 1st December 2015 and 29th February 2016 was analyzed. The analysis included the number of patients, assigned triage level (1-5) according to the ESI modification adjusted by consilium of emergency medicine specialists, final decision on admission or discharge and deaths. Moreover, the reasons of patients' assigned to level 5 admissions were analyzed. The triage was performed by qualified nurse or paramedic, the final decision on admission was made by the doctor after medical examination (exam) and test results. To assess the total number of requiring hospitalization, deaths were classified as patients eligible for admission. During the study the participant observation was carried. The observer evaluated the performance in terms of waiting times for exam of particular triaged patients' groups.

Results: The total number of ED patients was 11368. Out of this number 20,17% were qualified for admission. Each triage level was respectively: 1-0,53%, 2-2,75%, 3-17,91%, 4-73,08%, 5-5,73%. Inside these groups decisions on admission were: 1-100%, 2-74,44%, 3-42,29%, 4-13,54%, 5-2,15%. Deaths occurred only in levels 1-3. Reasons for admission of level 5 were triage errors largely caused by staff aversion to intoxicated patients who should have been assigned to the upper level or planned admissions held by ED. Participant observation showed that on the busiest time waiting exam time for level 3 patients may exceed 1,5 hour. Waiting time for level 4 patients exceed 4hours.

Conclusions: Level 4 group is large as the waiting time is long. However, these are patients who are not at risk so in a situation of limited resources can be postponed. Level 3 patients are the most vulnerable - in this group are both: not requiring hospitalization and at risk of dying. Staff shall undergo periodic training to ensure high quality of triage. System solutions are also necessary.

7. **Learning to practice narratives**

Becky J. Donelon¹

1. *Alberta College of Paramedics, AB, Canada.*

In this narrative inquiry, I explored 5 paramedics' experiences of learning within a technical education program

grounded in a behaviourist paradigm. I focused on understanding the learning experiences that shaped participants' knowledge constructs in readiness for the complexities of practice. This research puzzle began with my first experiences as a novice paramedic learning to do practice. My interest in this study evolved through reflection upon my experiences as a student, practitioner, and educator. Story is an important way paramedics can interpret how their experiences shape them. The meanings embedded in paramedic learning experiences can be understood and shared through stories, which can provide insight for future paramedics. Research texts were co-constructed iteratively over time with participants while attending to a 3-dimensional narrative inquiry space (temporality, sociality, and place). As a narrative inquirer coming into relation with participants in order to conduct this inquiry, I brought Dewey's (1938) experiential theory based on continuity and transaction as central to my understanding of teaching and learning experiences. I interpreted the stories through my postmodernist lens, which shapes my telling as well as my thinking with others' stories. Participants' stories form the basis for learning to practice narratives. The narratives that emerged from the stories revealed what participants found meaningful during their student experiences and how this shaped their knowledge constructs. The narratives illuminated the complexities, tensions, and possibilities embedded within experiences of learning to become a paramedic. Narratives that arose from thinking with the stories that shape learning for practice feature (a) relational ethics, (b) developing identity, and (c) tacit knowledge.

8. Ultrasonography in the diagnosis of deep vein thrombosis (DVT) in the emergency department (ED). The number of tests performed, technical aspects and diagnostic pitfalls.

Monika Bednarek^{1,2}, Karol Malec², Marcin Tusiński²

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Background: Patients with suspected DVT are a small group compared to the total number of patients presenting to the ED. However, due to the high health risk for the patient with DVT its diagnosis using a limited-compression ultrasonography (LC US) is essential among doctors working in the ED.

Objectives: 1. To determine the frequency of patients' presenting to the ED with suspicion of DVT. 2. To introduce DVT diagnostic principles in the ED environment using physical examination, LC US and laboratory tests, based on the own experience and available publications.

Methods: The electronic records of all the patients admitted to the Emergency Department Trauma Center University Hospital in Cracow between 01.07.2013 and

30.06.2014 have been searched for International Statistical Classification of Diseases and Related Health Problems codes related to DVT diagnoses and procedures. These group of patients has been analyzed for the performed diagnostic tests and final diagnosis.

Results: From out of the total 39 383 patients we have selected 296 (0.75%) among whom DVT has been suspected. DVT has been finally diagnosed in 82 cases (27.7%), which accounted for 0.2% from all the studied population. In 214 cases (72,3%) DVT has been excluded. In 39 cases (47,6% of DVT diagnoses) diagnosis has been based on physical examination and D-dimer result. That was due to the lack of the LC US among the standard tests performed in the ED. In 43 cases (52,4% of DVT diagnoses) for the DVT diagnosis were additionally used full compression ultrasound or LC US. In 205 cases (95,8% of DVT exclusions) the exclusion was made based on the full compression ultrasound or LC US, when the D-dimer result was positive or not taken. In 9 cases (4,2% of DVT exclusions) DVT were excluded on the basis of negative D-dimer result without performing any ultrasonography.

Conclusions: In the environment of a large ED the DVT diagnostic procedures are carried on average on one patient daily. Interpretation of D-dimer test and performing LC US should be present in ED physician's skills. Ultrasound examination is mainly used to exclude the DVT with the presence of positive D-dimer test. In some situations it is necessary to perform a reference ultrasound by an experienced specialist from outside of the ED.

9. Facilitating Paramedic Continuous Professional Competency: The #IrishEMS chat.

James Ward¹, Alan M. Batt²⁻⁵, David Menzies^{6,7}

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Background: Social Media is growing in popularity, quickly becoming the go to medium for keeping up to date, collaborating, networking & sharing knowledge. In November 2015 the authors registered a hashtag, #IrishEMS, with the express aim of hosting a one hour chat each Monday night. While it is open to all and its success relies upon international and multidisciplinary contributors, the hashtag was chosen to give it a focus based in Irish prehospital guidelines and Irish EMS practice.

Objectives: The purpose of this study is to outline the objective of the hashtag #IrishEMS and to offer insight into the extent of its reach to date. It is hypothesised that practitioners in Ireland and abroad both contribute to, and benefit from, this venture. It is our belief that this simple

measure is a valid source of verifiable continuous professional competency (CPC) for practitioners.

Methods: An analytical report of all tweets containing the hashtag #IrishEMS was generated from the date of registration of the hashtag. This allows analysis of impact using several variables such as number of tweets, impressions etc. Transcripts and the analytics of each Monday night's chat have been analysed to explore the number of contributions, the overall reach of these tweets and the professional background of the participants.

Results: In the 19 weeks, from November 2015 to March 2016, we have recorded 5,068 tweets which included the hashtag #IrishEMS. 511 contributors from a range of healthcare professions and voluntary backgrounds have been involved with a total potential reach of 5,812,507 users.

Conclusion: #IrishEMS chats are encouraging practitioners to engage with prehospital topics with an Irish perspective. An opportunity exists for individuals to record these chats on a weekly basis, either electronically or simply by printing a transcript of the discussion as evidence of continuing professional competency activity.

10. EMS Physician Presence Decreases Scene Times for Trauma Calls: A Pilot Study

John McManus¹, Kerry Bachista¹, Michael Willis², David Wampler³, Richard Schwartz¹

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Introduction: In North America physician response to EMS scenes is not a common occurrence. Most systems do not utilize an EMS physician and field response unit for call response. Our system currently utilizes a physician vehicle where the EMS physician is available for independent response to incident scenes. Our vehicle is fully equipped with ALS equipment and medications including video laryngoscopy and 12 lead ECG capability. We can respond independently to any call when on duty and are available off duty to respond to major incidents when requested by the local EMS agency. Scene times in prehospital trauma patients have been studied and show an increased survival benefit when patients are transported quickly (<20 min). We hypothesized that the presence of the EMS physician on scene would improve on-scene times for trauma patients.

Methods: We conducted a retrospective chart review for quality assurance of dispatch logs over the previous 90 days. Trauma calls were defined as traffic accidents (including vehicle vs pedestrian), gun shot wounds, stabbings and traumatic injuries and were included in the data set. Furthermore, calls were chosen only if there was an emergent response and transport to the hospital. The primary outcome was on scene time.

Results: We collected data on 20 charts with physician response and compared them to a matched historical control subset with no physician present on scene. Scene time was calculated from the time the transporting unit arrived on

scene to when they departed for the hospital. The mean scene time for calls in which the EMS physician was present was 14 (± 5 95%CI: 11-16) minutes compared to 19 (± 10 95% CI: 15-24) minutes ($p = .008$). All scene times were <20min when physician was present. There was a 68% decrease in scene times for trauma patients when the EMS physician was present on scene.

Conclusion: In this pilot study a decreased scene time was achieved for trauma patients when physician was present. A large prospective study is planned to look at prehospital patient outcome.

11. Did Paramedics Learn in CME?

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2. Regional Paramedic Program for Eastern Ontario, ON, Canada.

Introduction: The Kolb's Experimental Learning design identifies four distinct learning styles which coincide with a four-staged learning cycle. The Kolb's method includes learners feeling, watching, thinking and doing. The Regional Paramedic Program for Eastern Ontario is mandated to provide medical oversight inclusive of Continuing Medical Education (CME) to nine paramedic service operators in Southeastern Ontario.

Objectives: Our goal was to evaluate the Kolb's experimental learning model after implementation at our CME.

Methods: The CME session was planned designed and implemented utilizing the Kolb's model. Facilitators were introduced to the learning objectives and desired outcomes prior to the CME sessions and delivered the objectives to the learners (paramedics) during the CME day. Anonymous pre learning (session) and post learning (session) multiple choice questionnaires were administered to the paramedics. The questions directly related to a deliverable (learning objective) within the CME sessions. Using an observational study, we measured the change (increase or decrease) in learning by pairing up pre and post for each paramedic and noting the results.

Main Results: 712 paramedics participated in Spring CME. 492 paramedics completed pre and post questionnaires. 157 (32%) respondents were ACP, 335 (68%) respondents were PCP. Mean knowledge increase range for 157 ACPs: 12.1% to 32.1% (confidence interval [CI] 95%). Median range for 157 ACPs: 3.9% to 20.0%. Mean knowledge increase range for 335 PCPs: 18.0% to 27.3% (confidence interval [CI] 95%). Median range for 335 PCPs: 13.4% to 26.7%. The results demonstrate a marked increase in paramedic learning after leaving the CME session, two-tailed P value is < 0.0001 and one-tailed P value is 0.0002. There was evidence that suggested that participant satisfaction scores did not correlate with paramedics overall learning.

Conclusions: Utilizing Kolb's Experiential Learning Design Model for adult learners, Paramedics did increase their learning in their classroom continuing medical

education session.

12. Skills retention 3 months after neonatal resuscitation training in a cohort of healthcare workers in Sierra Leone

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Background: Sierra Leone has one of the highest neonatal mortality rates in the world, with almost one in twenty babies dying within the first month of life [1]. A number of simple interventions are available, which can potentially reduce newborn death rates. However, coverage of these interventions remains low [2]. Data suggests that less than 15% of midwifery staff in Sierra Leone possess the skills to resuscitate a newborn [3]. As approximately one-third of neonatal deaths in low-income countries are secondary to birth asphyxia [4], neonatal resuscitation training is a potentially important intervention in these environments.

Objective: To evaluate skills retention three months after neonatal resuscitation training amongst a cohort of health workers in Sierra Leone.

Methods: A one-day neonatal resuscitation training programme was delivered to 48 healthcare workers in Bo Government Hospital, Sierra Leone. The primary measured outcome was the baseline examination score immediately after completing the training and the 12-week repeat testing score. We compared baseline and repeating testing results using a repeated-measures ANOVA.

Results: 34 healthcare workers returned for testing. Their baseline characteristics and baseline skills-test scores were not significantly different from those who did return. The median baseline score achieved on the skills test was 90%. After three months, this dropped to 55%. There was no relation between frequency of involvement in neonatal resuscitation and skills degradation.

Conclusions: Regardless of role or experience, neonatal resuscitation skills decreased dramatically over a period of three months post-training. Stand-alone resuscitation training is the predominant model of resuscitation training in many countries, both in low- and high-income settings. These data suggest that isolated resuscitation training courses may not be sufficient to achieve ongoing competency in certain environments.

13. Patient Outcome Feedback for Paramedics

Paige Mason¹, Mike VanDenBrink¹, Kelly Donovan¹,

Jordan McDonald¹, Craig Docking¹, Alex Gianakakis¹

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Background and Purpose: There is an immense need for quality assurance in all fields of medicine. A potential way to increase quality improvement in prehospital health care is to provide hospital driven feedback to paramedics. We devised a study to gain insight into professional opinions and attitudes regarding patient outcome feedback. Furthermore, we aimed to evaluate the perceived effectiveness of patient outcome feedback in increasing clinical diagnostic skill and confidence.

Methods: Participants were recruited via email and social media (i.e. Facebook, Twitter). A general consensus survey on Google Forms of 15 questions was distributed to working paramedics to gain insight into professional opinions regarding patient outcome feedback. Responses for 462 people were analyzed.

Results: The results of the survey demonstrated that paramedics are interested in learning the diagnosis of their patients from the emergency department. Of the 426 survey participants, 95.8% (n=442) believed that learning their patient's diagnosis in the ED would be beneficial to them. A majority, 98.5% (n=455), stated they would access the information if it were available to them. Furthermore, 86.1% (n=398) of participants believed receiving feedback would lead them to complete research on the topic of their patient's diagnosis and 91.6% (n=423) believed receiving patient outcome feedback would improve their confidence as a health care professional.

Conclusions: Based on the responses from the survey, it is apparent that paramedics are of the professional opinion that patient outcome feedback information would be beneficial to them. Respondents stated that a feedback system would increase their confidence as health care professionals and would lead them to complete further research. More research is required to determine if patient outcome feedback increases paramedic diagnostic accuracy.

14. Paramedicine Use of Realistic Simulation in Education (PURSE)

William Johnston¹, Alan M. Batt^{1,4}

1. Fanshawe College, London, ON, Canada; 2. Centre for Paramedic Education and Research, Hamilton Health Sciences, Hamilton, ON, Canada; 3. National Ambulance LLC, Abu Dhabi, United Arab Emirates; 4. Centre for Prehospital Research, University of Limerick, Ireland.

Background: Significant bodies of evidence have suggested the importance of simulation based learning for medical education in training of physicians, nurses, and other allied health professionals. Although there is a large body of evidence in other medical fields, there has been very little reported evidence of simulation use in paramedic education. We are examining the prevalence and types of simulation used in Canadian Paramedic education. We intend to assess gaps in simulation use.

Objective: The purpose of this study was to examine the patterns of simulation use and simulation resource inventory in Paramedic programs across Canada.

Methods: This is a cross-sectional survey of paramedic educators across Canada. Survey questions were devised by the researchers after consultation with key stakeholders in simulation education in the fields of Paramedicine as well as other allied health professions. These questions were then reviewed by Paramedic educators to ensure that the questions were clear and accurately assessed the desired information. After review the questions were sent via online survey to Paramedic program coordinators across Canada.

Results: We are still waiting on results and this abstract will be updated when they are available. We expect to find that simulation use is prevalent in some form in all Paramedic education throughout Canada. We expect that more low fidelity models of simulation (simple manikins and task trainers) are being used significantly more than high fidelity simulation. We expect that the largest barrier to high fidelity simulation use in Paramedic education is not lack of resources, but lack of appropriate training.

Conclusion: Paramedics treat patients in austere environments with limited resources. These calls often require critical timely interventions with high potential benefit to our patients. Unfortunately these calls are rare and often do not occur during transition to clinical practice. Realistic simulation allows training of these skills when patient health is not at risk. By understanding the current gaps in education use we can address improvements that can be made to the educational process to better prepare Paramedics and benefit our patient's health.

15. Understanding pain management in prehospital care: educational aids for the Irish options.

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Background: Pain is the main complaint for Emergency Department (ED) presentation (Cordell et al 2002; Alonso-Serra and Wesley 2003). Historical reports show that prehospital analgesia has been suboptimal (Chambers 1993; Murphy et al 2016). In recent years the Prehospital Emergency Care Council has improved the scope of practice of the Irish prehospital providers with a larger choice of agents (PHECC 2014). Targeted stakeholders have accepted Pain relief as a principle Key Performance Indicator (KPI) for ambulance services (Murphy et al 2016).

Objectives: To understand the effectiveness, times of peak of effect and duration of effect, of a single dose of the pain relieving medications available to Irish prehospital practitioners. To develop educational visual aids.

Methods: A literature review of Randomised Control Trials comparing analgesic agents used in prehospital care was undertaken. Individual medications pharmacodynamics were reviewed.

Results: No one analgesic agent is the panacea for prehospital pain management. Practitioners need to take into

consideration, the pain pathways, non-pharmacological options, as well as the pharmacodynamics of the different medications available. Patient's analgesia and comfort should be considered for the rescue / extrication phase, the transportation phase and the waiting-for-further-treatment period in the ED. Three educational visual aids were developed.

16. Trauma Review: intubation– how good are we; fluids – is there too much of a good thing; and let's talk transfusion. What does the literature say?

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Background: There is controversy regarding morbidity and mortality associated with prehospital airway management and fluid resuscitation. In many prehospital environments, emergency service providers are tasked with assessment and intervention with little or no time to optimize patients. What does the literature say regarding these topics? Is there room for improvement?

Objective: A literature review of journal articles was performed to ascertain in trauma settings: 1) Prehospital endotracheal intubation success rates 2) What is an appropriate blood pressure goal during fluid resuscitation and associated mortality with aggressive fluid use? 3) What are appropriate blood product administration ratios. Methods: An on-line search through the National Center for Biotechnology Information database for journal articles, and other available online resources was performed. Only recent articles (publication dates 2009 – 2015) were assessed.

Results: Prehospital intubation success rates range from 70-98% when performed by paramedic personnel (land and air services), with a high number of unrecognized esophageal intubations (~ 12%). First pass success rates are low (~64%) with improved rates for subsequent attempts (70-98%). Resuscitation with a goal of normotension can have a significant repercussions for trauma patients, including dilutional coagulopathy, soft clot dislodgement and increased blood loss. Literature suggests a target systolic blood pressure of 70-90mmHg with normal mentation and peripheral pulses; this can be achieved with crystalloid solutions, colloids or vasopressors although one must consider individual pathology when deciding upon colloid solutions. With a massive transfusion of blood product, the ratio for these products should be 1:1:1 Packed cells: platelets: fresh frozen plasma, as a reduction in mortality (36% to 17% at 24hrs, and 55% to 34% at 30 days)and coagulopathy has been shown.

Conclusions: For prehospital intubation, there is room for improvement with first pass success rates, which may be easily improved with basic positioning and preparation techniques. As for blood pressure management during trauma resuscitation, "permissive hypotension" should be our goal rather than normotension. To that effect, crystalloid solutions, colloids and vasopressors are all appropriate. Massive transfusion using a 1:1:1 ratio results in a significant decrease

in mortality.

18. Educating paramedics for the future: more than lights and sirens

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Background: The United Kingdom, Australia and New Zealand have moved toward near-mandatory higher education models for entry-level paramedics. While three-year Bachelorette degrees generally provide the scope and flexibility to introduce a wider range of studies in primary care and public health, they face the challenge of adding these topics to an already crowded curriculum.

Objective: One Australian university has responded to this challenge through the development and implementation of a four-year paramedicine program. Shortly after its provisional accreditation, the program was reviewed against the future needs of students, industry and the community.

Methods: Practice trends and the educational requirements of future entry-level paramedics were critically examined in Australia and internationally through a literature review, conference attendances, direct feedback from the field, and overseas visits. Practice trends and the educational needs of future entry-level paramedics were critically examined and addressed through a four stage process consisting of: collection of relevant evidence; analysis of data; curriculum development; and implementation of the program.

Results: The review of the literature, field visits and brainstorming activities confirmed the need for a broader educational curriculum and field experiences for paramedicine students that would better equip them for the emerging roles of paramedics both within traditional ambulance services and a wide range of other settings, such as the Defence Forces, remote industry sites, overseas aid missions and more.

Conclusion: The program was modified, and a four-year Bachelor of Paramedic Practice / Bachelor of Public Health Promotion was developed and first offered to commencing students in 2014. The structure of the program provides opportunities for students to gain skills and knowledge beyond that traditionally delivered, such as knowledge specific to primary health care and public health promotion. The program is designed to broaden paramedicine student horizons and prepare graduates for interdisciplinary, inclusive, and integrated practice. The public health components of the program allow for enhanced and flexible roles within communities and professional settings, and are responsive to calls for a holistic model of education to meet future paramedic role demands.

19. Paramedics assessing Elders at Risk for Independence Loss (PERIL): Derivation, Reliability and Comparative Effectiveness of a Clinical Prediction Rule

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Objectives: We conducted a program of research to derive and test the reliability of a clinical prediction rule to identify high-risk older adults using paramedics' observations.

Methods: We developed the Paramedics assessing Elders at Risk of Independence Loss (PERIL) checklist of 43 yes or no questions, including the Identifying Seniors at Risk (ISAR) tool items. We trained 1,185 paramedics from three Ontario services to use this checklist, and assessed inter-observer reliability in a convenience sample. The primary outcome, return to the ED, hospitalization, or death within one month was assessed using provincial databases. We derived a prediction rule using multivariable logistic regression.

Results: We enrolled 1,065 subjects, of which 764 (71.7%) had complete data. Inter-observer reliability was good or excellent for 40/43 questions. We derived a four-item rule: 1) "Problems in the home contributing to adverse outcomes?" (OR 1.43); 2) "Called 911 in the last 30 days?" (OR 1.72); 3) male (OR 1.38) and 4) lacks social support (OR 1.4). The PERIL rule performed better than a proxy measure of clinical judgment (AUC 0.62 vs. 0.56, p=0.02) and adherence was better for PERIL than for ISAR.

Conclusions: The four-item PERIL rule has good inter-observer reliability and adherence, and had advantages compared to a proxy measure of clinical judgment. The ISAR is an acceptable alternative, but adherence may be lower. If future research validates the PERIL rule, it could be used by emergency physicians and paramedic services to target preventative interventions for seniors identified as high-risk.

Recommended Citation

Individual abstracts: Surname Initial. Abstract Title.
Irish Journal of Paramedicine. 2016 Jun; 1(S1) page number

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