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MEMC-GREAT *Abstracts Special Issue*

Supplement to

Western Journal of Emergency Medicine:

Integrating Emergency Care with Population Health

MEMC-GREAT 2017

Jointly Organized by the American Academy of Emergency Medicine (AAEM), the Global Research on Acute Conditions Team Portugal (GREAT Portugal) Network, and the Mediterranean Academy of Emergency Medicine (MAEM)

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MEMC-GREAT 2017 - Jointly Organized by the American Academy of Emergency Medicine (AAEM), the Global Research on Acute Conditions Team Portugal (GREAT Portugal) Network, and the Mediterranean Academy of Emergency Medicine (MAEM)

IXth Mediterranean Emergency Medicine Congress, Lisbon Portugal, 6-10 September, 2017

The IXth Mediterranean Emergency Medicine Congress (MEMC), jointly organized by the American Academy of Emergency Medicine (AAEM), the Global Research on Acute Conditions Team (GREAT), and the Mediterranean Academy of Emergency Medicine (MAEM), will be held in Lisbon, Portugal, on 6-10 September 2017.

We have a deep commitment to the global development of our specialty around the Mediterranean basin, and indeed around the world. We endorse workplace fairness, residency training, and lifelong education in emergency medicine. All patients should have access to care by qualified emergency physicians and systems of care. MEMC17 is an opportunity to share the very best practices from high-resource countries with mature systems, countries that have recently achieved specialty status, and low- resource countries delivering care even in austere environments.

Our sessions will cover aspects such as acute cardiac conditions, critical care, basic and advanced ultrasound, immigrant and refugee health, tactical and military medicine, trauma resuscitation, toxicology, prehospital care systems, and much more.

The *Journal of Emergency Medicine* (*JEM*) is sponsoring a poster and oral abstract competition. The 50 abstracts with the highest scores by the Abstract Review Committee will be published in the *JEM* or the *Western Journal of Emergency Medicine (West*JEM). The primary authors of the top three scoring abstracts will be invited to deliver a ten-minute oral presentation during the opening ceremony.

Our curriculum will be impactful to both new and seasoned physicians, residents and medical students. as well as to nurses, researchers and scientists, prehospital providers, pharmacists, nutritionists, and anyone involved in the delivery of emergency care.

We are delighted to host MEMC17 in Lisbon, Portugal, and invite you to explore all that this historic city and its surrounding areas have to offer.

So come and join us for a unique and cutting edge, truly diverse and inclusive educational experience in one of the most enchanting and affordable cities in the Mediterranean. Bring your family, and enjoy the best mix of professional and family activities. Our Congress will not be the same without you, so please meet us in Lisbon, and allow us the pleasure of welcoming you personally to the best international conference of the year!

We look forward to seeing you in Lisbon!

Professor Mark I. Langdorf, MD, MHPE, FACEP, FAAEM, RDMS
Editor-in-Chief, *Western Journal of Emergency Medicine*

The *Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health* would like to thank the Mediterranean Academy of Emergency Medicine and the Academic Research and Educational Organization for helping to make this collaborative special issue possible.

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MEMC-GREAT 2017

Lisa Moreno-Walton, MD, MS, MSCR, FAAEM

Secretary-Treasurer, AAEM Board of Directors
Executive Chair, MEMC-GREAT 2017

Dear Friends and Colleagues in Emergency Medicine:
It is with great pleasure that I invite you to attend the premier international conference in Emergency Medicine: the Mediterranean Emergency Medicine Congress (MEMC), which will take place this year in Lisbon, Portugal from September 8-10, with pre-congress courses offered on September 6th and 7th. MEMC has a rich history of collaboration between the American Academy of Emergency Medicine (AAEM), our European colleagues in EM, and the Mediterranean Academy of Emergency Medicine. For the past 16 years, AAEM and our partners have sponsored this outstanding conference in Rome, Marseille (France), Kos (Greece), Valencia (Spain), Sorrento (Italy), Nice (France), Sitges (Spain) and Stresa (Italy), featuring the most outstanding speakers in Emergency Medicine. This year, our keynote speaker is Prof. Lee Wallis, a pioneer in establishing EM and EMS is South Africa and sitting President of the International Federation of Emergency Medicine (IFEM). Our plenary speakers will include many of your favorites from AAEM: Dr. Amal Mattu will update us on the most important cardiology research reports that will change your practice, and Dr. Kevin Rodgers, AAEM President, will get you savvy on how the business of EM impacts your practice no matter where in the world you work. An international favorite, Dr. Jim Ducharme, President Elect of IFEM and a world renowned expert on pain management will give you practical advice on the evidence based and sound management of pain, putting you in control of an aspect of your practice that most of us find challenging. The themes of this year's Congress are Diversity and Inclusion and Career Development, and highlighting these themes will be Middle Eastern luminaries Dr. Amin Antoine Kazzi, former president of AAEM and founder of the MEMC, discussing the merits of universal global standards for certification of emergency physicians, and Dr. Eveline Hitti, the Chair of Emergency Medicine at American University of Beirut who is doing ground breaking research on the barriers to the advancement of women in medicine (not just the glass ceiling, but also the "domestic tethers" that represent the uneven distribution of household and child rearing tasks in dual career households). Our newest partner, GREAT Italy (Global Research on Acute Conditions Team) will feature one of the most experienced researchers in cardiac emergencies, Dr. Frank Peacock, who will discuss the impact of highly sensitive troponins on ED practice.

Beyond the plenaries, our educational tracks will bring you the most current practices in toxicology, infectious disease, cardiac emergencies, pulmonary emergencies, EMS, updates in pediatric care, pain management, critical care, and more. We will also explore cutting edge topics such as the newest theories in medical education, ethical issues in the practice of global EM, the role of hyperbaric medicine in the ED, the role of the EP in combat medicine, and success stories from countries where EM is an emerging specialty. World leaders such as Prof. Juliusz Jakubaszko (Poland), Prof. Judith Tintinalli (US), Prof. Robin Roop (National Health Service-Wales), Dr. Jean O'Sullivan (Ireland), Dr. Hari Prasad (India), Dr. Fatima Rato (Portugal), Dr. Kelhan Golshani (Iran), Dr. Lim Swee Han (Singapore) and Dr. Nino Butskhrikidze (Republic of Georgia) will bring expertise from some of the 30 countries that will be represented at MEMC, enhancing our commitment to diversity and inclusion in the development of global emergency medicine. Under the direction of Drs. Mark Langdorf, Ed Panacek and their team, 300 cutting edge original research abstracts by up and coming young EM students, residents and junior faculty will be presented orally and as posters. Come and see the work being done by the colleagues you will be reading about in the coming decades!

This year's pre-courses are an outstanding line up. Dr. Terry Mulligan will return with his very popular course on ED Administration. Dr. Gary Gaddis will again lead his course on how to get your manuscript published, assisted by Editors in Chief of no less than five highly indexed EM publications ready and willing to help you see your manuscript in print. Ultrasound beginner and advanced courses, Amal Mattu's always sold out EKG course, critical care and resuscitation and our new simulation course will be augmented by the never before featured courses on management of chemical and radiation incidents (co-taught by Portuguese experts and AAEM's resident tox expert, Dr. Ziad Kazzi) and how to effectively manage in-flight emergencies (co-taught by Dr. Kumar Alagappan and a team of pilots and flight attendants).

And we want you to leave time to explore lovely, romantic Portugal! This is the land of golden sand beaches with some of the best surfing and swimming on earth; the soulful music of Fado; luscious Port wines; the medieval village of Obedos, perfectly preserved; religious shrines such as Fatima; the UNESCO heritage city of Sintra, where

you will walk in the footsteps of the Emperor Octavius, through the Moorish occupation and the Caliphate of Cordova, the conquest by Crusaders, the reign of King Ferdinand, into the world of modern Portugal. And modern Portugal is a traveler's dream. The Portuguese are foreigner- friendly, engaging, fun loving people. Most Portuguese natives speak fluent English. The country is safe, clean, and incredibly economical, offering the perfect mix of traditional churches and castles with modern night clubs and delightful restaurants and parks. The food is outstanding, and every major wine magazine is extolling the virtues of Portugal's emerging wine market. Be the first to taste the vintages that will soon be the most cherished! Our conference hotel, the Corinthia, is one of the most elegant and luxurious in Europe, and the staff is completely committed to your comfort and enjoyment.

I cannot imagine a better venue to combine education, friendship, family and fun than the MEMC 2017 in Lisbon. For me, the greatest pleasure will be welcoming you. If you are already a part of the MEMC family, it will be a joy to be with you again. If you are not, we invite you to make MEMC a tradition for yourself, your family and your friends, and to join us on the odd numbered years in the sultry Mediterranean for the best mix of learning and fun that you can imagine. Our incredible team will make you feel at home with a handshake, a kiss on the cheek, and a smile. Come and tell us what we can do to make the best conference even better. We want to meet and exceed your every wish for the finest learning experience and the most wonderful vacation. It is my hope that you will become a part of the MEMC family as a conference attendee, an abstract presenter and a speaker. This is not the big, impersonal, "take a number and scan your badge" conference. Every attendee matters to us; everyone is a friend and a colleague. The exchange of ideas, collaborative research, sharing educational resources, providing opportunities for career growth, and lifelong friendships that span continents and languages are what we are about. We embrace the spirit of diversity and inclusion and career development, and we want you to be a part of the inclusive and nurturing environment taking place in one of the most beautiful places on earth. MEMC will not be the same if you are not there. Grace us with your ideas, your talent, your knowledge and experience. Be a teacher and a learner at MEMC. Check us out on our website: www.emcongress.org. I look forward to welcoming you in Lisbon!

Address for Correspondence: Lisa Moreno-Walton, MD, MS, MSCR, FAAEM. Secretary-Treasurer, AAEM Board of Directors, Executive Chair, MEMC-GREAT 2017.

Conflicts of Interest: By the WestJEM article submission agreement, all authors are required to disclose all affiliations, funding sources and financial or management relationships that could be perceived as potential sources of bias. No author has professional or financial relationships with any companies that are relevant to this study. There are no conflicts of interest or sources of funding to declare.

1 The Effect of Signed-Out Emergency Department Patients on Resident Productivity

Joseph JW, Stenson B, Chiu DT, Nathanson LA, Sanchez LD / Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA

Objective: Resident productivity is an essential component of operations in an academic emergency department (ED), and transitions in patient care between providers are inevitable. However, while the process of sign-out and its effect on care has been studied, it is unclear what effect the burden of sign-out has on an individual resident's productivity during a shift. We examined the effect of an increasing sign-out burden on resident physicians' productivity. As a secondary measure, we aimed to evaluate this relationship relative to training year.

Methods: This was a retrospective cohort study, conducted in a U.S.urban academic hospital ED, with a three-year emergency medicine training program in which residents pick up patients ad libitum, and receive sign-out from one or more resident colleagues within the first hours of their shift. Consecutive resident shifts were evaluated for new patients seen and patient sign-outs, as timestamps of all patient encounters are automatically logged in an observational database. We constructed a mixed linear model to predict productivity, defined as the number of new patients seen per shift. The main effect was the total number of patients signed out, with level of training as a covariate.

Results: We evaluated 18,296 resident shifts from 7/1/2010 to 7/1/2016. First-year residents saw an average of 10.3 (95% CI 10.0-10.5) patients per shift when they did not take sign-out, and saw 0.13 fewer primary patients (95% CI -0.15 to -0.11) for each additional sign-out patient. The effect of sign-out varied substantially based on level of experience, as second-year residents, who saw a mean of 12.9 (95% CI 12.5-13.2) patients per shift when they did not take sign-out, saw 0.09 fewer patients (95% CI -0.15 to -0.11) for every additional sign-out patient.

Conclusion: Sign-out burden has a small but significant correlation with residents' overall productivity in the ED. As EM residents progress in training, the effect of sign-out burden decreases.

2 Opioid Administration and Prescribing in Older Adults in U.S. Emergency Departments (2002-2013)

Marra E[1], Mazer-Amirshahi M[2], Mullins P[3], Pines J[3,4]/ [1]Department of Emergency Medicine, Aventura Hospital and Medical Center, Aventura, FL, [2]Department of Emergency Medicine, MedStar Washington Hospital Center, Washington, DC, [3]The George Washington University, School of Medicine and Health Sciences, Washington, DC, [4]Department of Emergency Medicine, the George Washington University, Washington, DC

Background: Recent literature suggests that acute pain in older adults is under-treated in the emergency department (ED). Opioids provide effective analgesia but have numerous potential adverse effects, which are magnified in older adults.

Objectives: Our goal was to assess trends in opioid use from 2002-2013 in older adults in U.S. EDs.

Methods: We analyzed data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) survey from 2002 to 2013. ED visits for painful conditions were selected and stratified by age (18-64, 65-74, 75-84, ≥ 85 years). We analyzed trends in opioid administration and prescribing to patients ≥ 65 and assessed predictors of use using survey-weighted chi-square tests and logistic regression. Trends in the use of six commonly prescribed opioids were also explored.

Results: Opioid use for patients 18-64 and ≥ 75 fluctuated between 2002-2013, but overall did not change significantly. There was a significant increase in opioid use for patients 65-74 between the coupled years of 2002-2003 to 2012-2013 (absolute change 5.1%, 95% CI (1.4-8.7), relative change 18.9%). From 2002-2003 to 2012-13, hydromorphone and morphine had the largest increase in utilization to adults ≥ 65 with overall relative increases of 252.2% and 95.2%, respectively. Oxycodone usage had a relative change of -63.4% during the studied 11 years. Opioid utilization peaked in 2010-2011 for all age groups and has since declined. Across all years studied, adults ≥ 65 received less opioids than their younger counterparts for painful conditions.

Conclusion: Adults ≥ 65 who presented to U.S. EDs between 2002-2013 with painful conditions received fewer opioids than younger adults. ED opioid use did not change between 2002 to 2013 for the majority of age groups, except for increases in utilization for patients aged 65-74. There was a trend towards the utilization of more potent opioids. Use of opioids in older adults requires balancing the risks of adverse effects and misuse while avoiding oligoanalgesia.

Opioid Administration and Prescribing to Patients Presenting with Pain to U.S. Emergency Departments from the National Hospital Ambulatory Medical Care Survey; 2002-2013.

	2002-03	95% CI	2007-08	95% CI	2012-13	95% CI	Relative Change	Absolute Change	95% CI
18-64	36.9%	(35.3-38.4)	43.4%	(41.2-45.7)	36.7%	(34.6-38.8)	-0.5%	-0.2%	(-2.9-2.6)
65-74	27.0%	(25.0-29.1)	35.1%	(32.5-37.8)	32.1%	(29.2-35.2)	18.9%	5.1%	(1.4-8.7)
75-84	25.4%	(22.7-28.3)	31.0%	(27.9-34.3)	28.1%	(24.4-32.3)	10.6%	2.7%	(-2.0-7.6)
85+	24.8%	(21.5-28.3)	26.2%	(22.5-30.2)	23.8%	(19.5-28.7)	-4.0%	-1.0%	(-6.6-4.6)

3 Get with the Guidelines: Comparing Management of COPD Treated in EDs in Europe and Australasia

AM Kelly, S Laribi, AANZDEM study group, EURODEM study group / Joseph Epstein Centre for Emergency Medicine Research, Western Health, St Albans, Victoria, Australia

Objective: Exacerbations of chronic obstructive pulmonary disease (COPD) are common in emergency departments (ED). Recent Australian and European guidelines provide recommendations for management in the acute phase of care with the aim of optimizing outcomes. These include the administration of inhaled bronchodilators, corticosteroids and antibiotics and non-invasive ventilation (NIV) in patients with significant respiratory acidosis. The aim of this study was to compare management and outcomes between cohorts of patients treated for COPD in Europe (EUR) and South East Asia/ Australasia (SEA).

Methods: In each region, we performed an observational prospective cohort study including consecutive patients presenting to EDs with dyspnoea as the main complaint during three 72-hour study periods. This study included the subset diagnosed with COPD. Data was collected on demographics, co-morbidities, chronic treatment, clinical features, treatment in the ED, ED diagnosis, disposition from ED and in-hospital outcome. The outcomes of interest for this study were comparison of treatments administered and outcome between EUR and SEA cohorts.

Results: A total of 112 EDs participated – 66 EUR and 46 SEA; 882 patients with COPD were studied (16% of total cohort). The cohorts were well matched for demographics and co-morbidities with the exception that significantly more in the EUR cohort were smokers (EUR vs. SEA for all comparisons; 43% vs 24%). While there was not a statistically significant difference in administration of bronchodilators (76% vs 80%), the proportion of administered corticosteroids was higher in the SEA cohort (52% vs 66%) as was administration of antibiotics (38% vs 49%). Rates of NIV and mechanical ventilation were similar. SEA had a higher hospital admission rate (70% vs 81%). In- hospital mortality was not significantly different (6% vs 4%).

Conclusion: Compliance with guideline-recommended treatments was higher in the SEA cohort. That said, compliance with administration of corticosteroids and antibiotics was sub-optimal in both cohorts and represents an opportunity to improve care for this high-risk cohort of patients.

4 Investigating the Effects of Under-triage by Existing Major Incident Triage Tools

Vassallo J[1,2], Smith JE[3,4] / [1]Division of Emergency Medicine, University of Cape Town, Cape Town, 7530, South Africa [2]Institute of Naval Medicine, Gosport, PO12 2DL, United Kingdom [3]Emergency Department, Derriford Hospital, Plymouth, PL6 8DH, United Kingdom [4]Academic Department of Military Emergency Medicine, Royal Centre for Defence Medicine (Research & Academia), Medical Directorate, Birmingham, B15 2SQ, United Kingdom

Objective: Triage, the process of prioritising patients on the basis of clinical acuity, is a key principle in the effective management of a major incident. The overall effectiveness of the triage process is not only a balance between identifying those who need or don't need a life-saving intervention, but also those who are under or over-triaged as either incorrectly needing/not needing intervention. This study aims to describe the implications of under-triage by existing methods of primary major incident triage, and to report triage tool identification of serious injury (Abbreviated Injury Score > 3).

Design and Method: We undertook a retrospective observational cohort study of the UK Trauma Audit Research Network for all adult patients (≥ 18 years) between 2006-2014. Patients were defined as Priority One using a previously published list. Using first recorded hospital physiological data, we then categorised patients by the Modified Physiological Triage Tool (MPTT), the Triage Sieve and the National Ambulance Resilience Unit Sieve. Data was described as number (%) and median (IQR) as appropriate. We analysed categorical data using a chi-square test and continuous data with a Mann-Whitney U test.

Results: During the study period, 218,985 adult patients were included with 24,791 (19.5%) identified as Priority One. Of these patients, 70% were male, aged 51 years [33-71], Injury Severity Score 16 [9-25], with road traffic collision the most common mechanism (34%). The MPTT demonstrated the lowest rate of under-triage (42.4%, $p<0.001$). Overall 30-day mortality for the Priority One cohort was 12.4%. Compared to existing methods, the MPTT under-triage population had significantly lower mortality (5.7%, $p<0.001$), identical to the overall study population. Serious injuries to the thorax (47.0%) and head (27.4%) predominated with the MPTT again significantly under-triaging fewer of these patients ($p<0.001$).

Conclusion: Existing triage tools under-triage patients with serious head and chest injuries, with alarmingly high numbers requiring life-saving interventions. The Modified Physiological Triage Tool demonstrates an improved safety profile supporting previous work demonstrating its improved performance over existing primary triage methods.

5 The Impact of a Cardiopulmonary Resuscitation Video on End-of-life Decisions of Emergency Department Patients

Kakish E, Haydar K, Eren D, Jansen J, Weber M/

Objective: We conducted a survey of patients to determine if end-of-life decisions, specifically a do-not-resuscitate (DNR) order, would be influenced by a video depicting cardiopulmonary resuscitation (CPR) in an emergency department (ED) setting.

Design and Methods: In this cross-sectional study, participants were selected from within the ED at the University of Toledo Medical Center. Participants completed a survey in which they provided the following information: age; race; sex; knowledge of DNR, and if so, who informed them what DNR is); if they had a DNR; and if they considered themselves to be persons of faith. Participants who were familiar with a DNR were then asked to watch a video depicting CPR performed on a patient. (The outcome of the CPR efforts was left unknown to participants.) Participants were then asked how accurately the video depicted CPR, and if after watching the video they had changed their mind with regard to their own DNR status.

Results: There were 179 participants in the study ranging from 18 to 85+ years of age. Of these, 51% were female, 78% were White, 18% were Black, and the remaining were Hispanic, Asian or Native American. We learned that 86% considered themselves persons of faith; 94% had heard of DNR; 30% had an established DNR status; and 85% of participants did not change their minds about their own DNR status, after watching the video.

Conclusion: Our survey results demonstrated that the majority of patients would not change their DNR status after watching a video portraying CPR and other resuscitative efforts. Physicians can perhaps have more confidence that patients are making informed decisions regarding their code status, without necessarily needing in-depth details. However, a factor that limited the study results was the number of patients (30%) who had an established DNR,. Each participant, whether or not they had a DNR status established, was asked if they had changed their mind about their own DNR status subsequent to watching the video; however, the majority of them did not have a DNR status prior to watching the video. Therefore, the results stating that 85% of participants did not change their mind about their DNR status may not accurately represent the percentage of patients who would not change their mind, given that the majority were perhaps neutral to the question.

6 Assessment of Post-graduate Year Training and Unplanned Floor to Intensive Care Unit Transfers

Bilello L, Ilg A, Solano J, and Chiu D / Harvard Affiliated Emergency Medicine Residency Beth Israel Deaconess Medical Center Boston, MA

Background: Academic emergency departments (ED) use residents of different post-graduate year (PGY) training levels to provide clinical care for patients under the supervision of attending physicians. Admitted patients who have an unplanned transfer from the floor to the intensive care unit (ICU) within 24 hours have been shown to have higher mortality and are a potential focus for quality improvement. It is unclear if the level of training of the emergency medicine (EM) resident correlates with unplanned transfers.

Methods: We performed a retrospective chart review with a primary outcome measure of unplanned floor to ICU transfers within 24 hours after ED admission. The variable of primary interest was PGY level. The study was done at an urban, academic tertiary care referral center with an affiliated three-year EM residency. All patients presenting to the ED between 07/01/2012 to 06/30/2015 were eligible. We used logistic regression to test for significance and to control for confounders such as emergency severity index (ESI), age, gender, unstable vital signs at triage, changes from ED observation to full hospital admission, ED length of stay (LOS), and time to doctor. Odds ratios (OR) with 95% confidence interval (CI) were used as the primary effect estimate.

Results: We reviewed the records of 60,609 admitted patients and found 1,769 (2.9%) were unplanned transfers from floor to ICU within 24 hours. The OR for each resident PGY level and attending physicians are as follows: PGY1 0.47 (CI 0.39-0.49); PGY2 0.43 (CI 0.38-0.48); PGY3 0.42 (CI 0.37-0.47); and attendings 0.21 (CI 0.20-0.22). There is an inverse relationship between the ORs of unplanned floor to ICU transfers and EM PGY level. This is not statistically significant as all p-values are greater than 0.05. Unstable vital signs at triage, age, ESI, ED LOS, ED observation status that required admission, time of arrival to time seen by physician, and gender were significant predictors of unplanned floor to ICU in 24 hours with a p-value of < 0.05.

Conclusion: This data shows that there was no significant difference between the PGY training level of the EM resident and unplanned floor to ICU transfer within the first 24 hours. Identification of variables significantly related with unplanned floor to ICU transfer within 24 hours may be valuable to prevent this adverse event.

7 Transparency as a Tool to Reduce Opioid Prescribing in One Emergency Department

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Objective: Between 2013 and 2016 opioid-related deaths in Massachusetts increased by over 53% (MA Department of Public Health). Nonmedical use of prescription opioids is a strong risk factor for heroin use, and even single, small prescriptions increase the risk for developing chemical dependency (*NEJM* 374;2). To promote physician stewardship in opioid prescribing, we studied prescribing practices before and after an administrative intervention. We proposed that full-time providers in our single-hospital group should have similar prescribing practices and that transparency in individual physician prescribing would result in an opportunity for physicians to compare their practices. Transparency would highlight significant practice variations and result in an opioid-prescribing change.

Design and Method: The setting was a 46k visit/year urban academic medical center. To establish a baseline, we tabulated all opioid prescribing by faculty for calendar year 2015. Starting in January 2016, using data from the electronic medical record, individual physician opioid prescribing was presented at a monthly physician meeting with complete transparency, including providers' names and opioid prescriptions. Shared data also included the percentage of discharged patients receiving an opioid prescription, the number of opioid prescriptions as a percentage of total prescriptions written, and year-to-date trends. There was no discussion of optimal target numbers, individual prescriptions, guidelines, rewards or penalties. We then contrasted 2016 and 2015 data.

Results and Conclusion: Over 12 months, opioid prescriptions decreased by 34%, the percentage of prescriptions for an opioid decreased by 33.9%, and the number of patients receiving an opioid prescription dropped by 37.6% (Table 1). Although there are other external factors that were not controlled, transparency regarding the number of opioid prescriptions written by the ED physician group and a monthly departmental discussion resulted in a significant decrease in the number of opioids prescribed.

Table 1. Comparison of physicians' opioid-prescribing frequency before and after an administrative intervention during which their prescribing practices were shared openly at monthly meetings.

Time Period	D/C Pts	Rxs	Pts Receiving Rx	# Opioid Rx	% Opioid Rx	% D/C Pts w/Opioid Rx
Jan-Dec 2015	32725	21282	17985	3120	14.70%	9.53%
Jan-Dec 2016	34628	21180	17652	2059	9.72%	5.95%
% CHANGE	**5.82%**	**(-)0.48%**	**(-)1.9%**	**(-)34.0%**	**(-)33.9%**	**(-)37.6%**

8 Major Incident Triage: The Civilian Validation of the Modified Physiological Triage Tool

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Objective: Triage is a key principle in the effective management of a major incident. Existing triage tools have demonstrated limited performance at predicting need for life-saving intervention. Derived using a military cohort, the Modified Physiological Triage Tool (MPTT) demonstrated the greatest performance at predicting the need for life-saving intervention. This study aimed to validate the MPTT in a civilian environment using trauma registry data.

Design and Method: The UK Trauma Audit Research Network database was interrogated for all adult patients between 2006-2014. We defined patients as Priority One if they received one or more life-saving interventions from a previously defined list. Using first recorded hospital physiological data, patients were categorised by the MPTT and existing primary physiological triage tools. We included only patients with complete physiological data in the analysis. Data was described as number (%) and median (interquartile range) as appropriate. We evaluated performance characteristics using sensitivity, specificity and area under the receiver operator characteristic (ROC) curve. Additional sensitivity analysis was performed on missing data using multiple imputation.

Results: During the study period, 218,985 adult patients were included in the database with 127,233 (58.1%) meeting inclusion criteria. Of those, 55.6% were male, aged 61.4 (43.1-80.0), Injury Severity Score 9 (9-16); 122,802 (96.5%) sustained blunt trauma, with low falls the most common mechanism (53.7%). We defined as Priority One 24,791 patients (19.5%) who received a life-saving intervention.

The MPTT (sensitivity 57.6%, 95%CI 0.569-0.582, specificity 71.5%, 95%CI 0.712-0.718) outperformed all existing triage methods with a 44.7% absolute reduction in under-triage compared to existing United Kingdom civilian methods. Comparison of the area under the ROC curve

demonstrated statistical significance, supporting the use of the MPTT over other tools (χ^2=484.55, p<0.001.) Results were unchanged following multiple imputation.

Conclusion: The performance characteristics of the Modified Physiological Triage Tool exceed existing major incident triage systems, whilst maintaining an appropriate rate of over-triage and minimising under-triage within the context of predicting the need for a life-saving intervention in a civilian population. Its use within a civilian major incident context is encouraged.

9 Point-of-care Ultrasound Use in the Diagnostic and Therapeutic Approach to Peritonsillar Abscesses

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Objective: Our previous retrospective, case-control study from January 2007 through December 2008 suggested that emergency medicine point-of-care ultrasound (POCUS) improved successful needle aspiration of peritonsillar abscesses. During that time period, POCUS was used in only 20% of cases. This study aimed to assess the more contemporary use and impact of POCUS since our initial review.

Design & Method: This was a single-center, retrospective, case-control study of all adult patients with a diagnosis of peritonsillar abscess who presented to the emergency department from January 2013 through December 2014. Chart review and abstraction were performed. We separated the data into those with emergency medicine POCUS versus those without ultrasound (NUS). The primary endpoint was successful aspiration with POCUS. Secondary endpoints were frequency of specialty consultation, need for computed tomography (CT), unscheduled return visits within one week, and length of stay. We used Fisher's exact method to analyze the frequency data, and applied the t-test to length of stay.

Results: There were 114 patients enrolled, 89 of whom had POCUS performed (78%). The results were as follows: successful aspiration by an emergency physician (EP), US 89% vs. NUS 4% p=0.001, (OR 189.6; 95% CI 23, 1157); overall success (including ear nose throat [ENT] consultant), US 98% vs. NUS 88% p=0.30, (OR 2.5; 95% CI 0.39, 15.8); ENT consultation rate, US 15% vs NUS 64% p=0.002, (OR 154; 95% CI 19, 1246); additional imaging (CT only), US 27% vs NUS 65% p=0.002, (OR 4.8; 95% CI 1.9, 12.3); return visit rate, US 4% vs NUS 12% p=0.18, (OR 0.34; 95% CI 0.72, 1.66); length of stay (minutes), US 166 vs NUS 267 p=0.0002, (95% CI 146, 309.5).

Conclusion: The increased availability and utilization of ultrasound has impacted our diagnostic and treatment approach to peritonsillar abscesses. Nearly 80% of cases employed POCUS in comparison to 20% previously. Likewise, ultrasound use by EPs improves the rate of successful aspiration of peritonsillar abscesses. Additionally, it appears to decrease specialty consultation rates, CT imaging, and length of stay.

10 Free OpenAccess Meducation (FOAM): The Global Distribution of Users in 2016

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Objectives: Free Open Access Meducation (FOAM) is a collection of interactive online medical education resources—free and accessible to students, residents, physicians and other learners. This novel approach to medical education has the potential to reach learners across the globe; however, the extent of its reach is still unknown. This study aims to describe the global distribution of FOAM users.

Design and Method: This descriptive report evaluates the 2016 web analytics data from a convenience sample of FOAM web blogs with a focus on emergency medicine & critical care (EMCC). We categorized the number of times a blog site was accessed, or "hits," by country of access, cross-referenced with World Bank data for population and income level, and then analyzed the data using simple descriptive statistics.

Results: We analyzed 12 FOAM blogs published from six countries, with a total reported volume of approximately 18.7 million hits worldwide in 2016. The number of unique countries accessing each blog ranged from 82 to 209.

The gross annual volume for the 20 countries with the most hits in 2016 is reported in Figure 1, and the adjusted annual volume of the 20 countries with the most hits weighted by country population is reported in Figure 2.

High-income countries have the largest proportion of FOAM users, with 75.3% of total hits and 74% of population-adjusted hits. Low-income countries contributed the least proportion of FOAM users, with only 0.41% and 0.29%, respectively.

Conclusion: FOAM, while largely used in high-income countries, is beginning to be used in low- and middle-income countries as well. The potential to influence medical education in places that otherwise have limited access to emergency medical education is prime for further research.

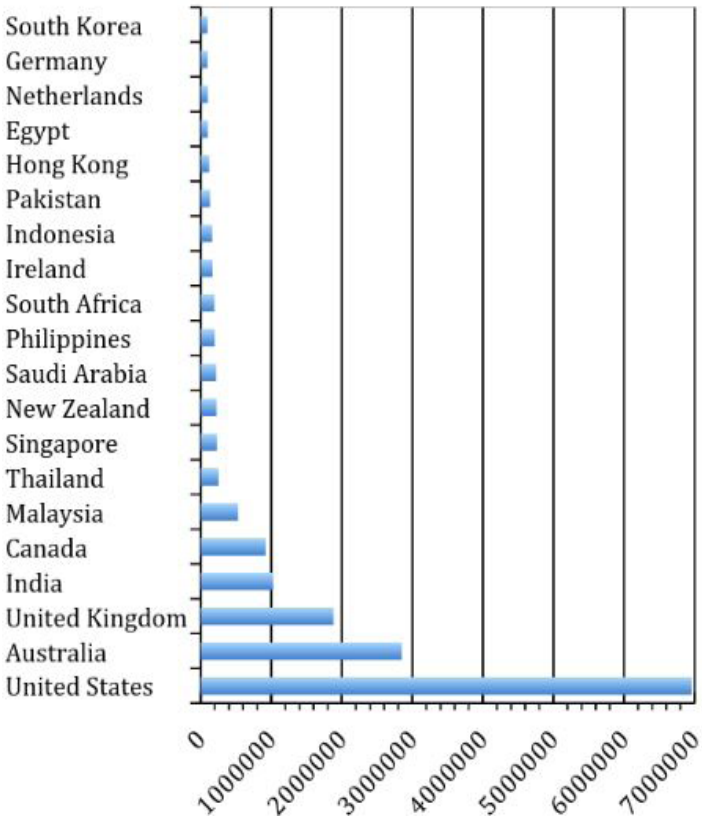

Figure 1. Gross Annual Volume for Top 20 Countries.

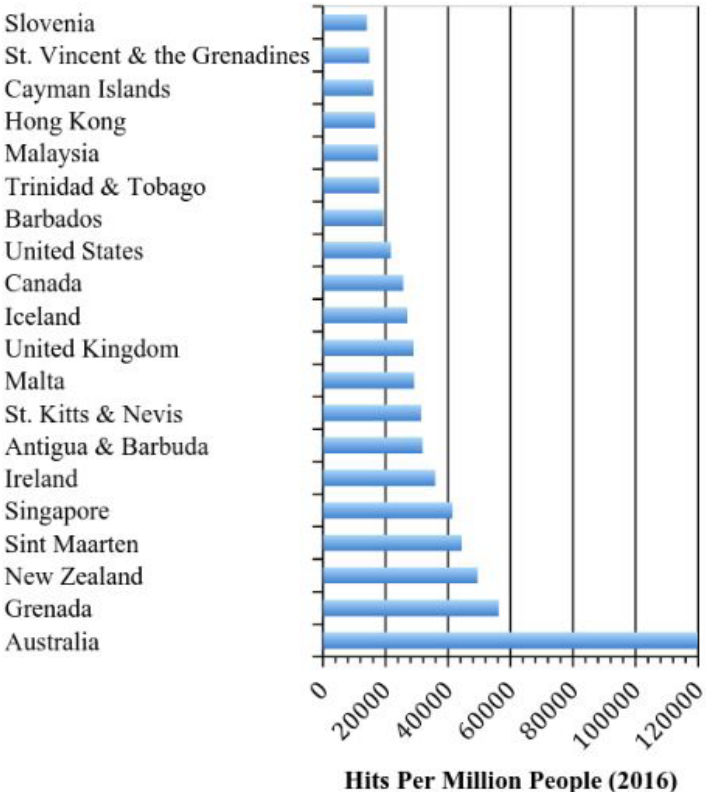

Figure 2. Population-Adjusted Annual Volume from Top 20 Countries.

Table 1. Distribution of FOAM Users by Country Income-Level.

Income Level	Total Hits	% of Total Hits	Hits Per Million People	% of Hits per Million People
High-income	14067663	75.30%	806043	73.72%
Upper-middle income	1604520	8.59%	190835	17.45%
Lower-middle income	2933755	15.70%	93350	8.54%
Low-income	77229	0.41%	3219	0.29%

11 Recovering Capacity – The Impact of Overnight Shifts on Resident Physician Productivity

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Objective: Overnight shifts are a necessary aspect of emergency medicine. While prior research has examined the effect of sleep deprivation on individuals' health and cognitive performance, its ultimate effect on emergency department workflow and individual productivity is unclear. Furthermore, little is known about how much time physicians need to recover from the transition from night to day schedules. We sought to determine the effect of overnight shifts on individual physician trainees' productivity on subsequent daytime shifts.

Design and Method: We conducted a retrospective cohort study of resident patient assignments in a U.S. urban academic emergency department (ED) from 7/1/2010 to 7/1/2016. Timestamps were collected via the ED information dashboard, through which residents assign themselves patients ad libitum throughout shifts. We constructed a generalized estimation equation using an autoregressive correlation structure to predict productivity in terms of patients per shift, with the amount of time since an overnight shift (characterized as greater than 36 hours, less than 36 hours, and 24 hours or less) and the resident's year of training as covariates.

Results: We evaluated 18,296 shifts: 8,351 (45.6%) by first-year residents, and 9,932 (54.4%) by second-year residents. First-year residents saw 9.8 patients per shift (95% CI 9.5-10.2) while second-year residents saw 13.4 patients per shift (95% CI 12.3 – 14.1). First-year residents saw 0.79 fewer patients per shift (95% CI -1.1 – -0.5) on shifts starting 24 hours after an overnight shift, but did not have a significant decrease in productivity when they had more time to recover. Second-year residents did not show a decrease in productivity after overnight shifts, even at 24 hours.

Conclusion: Daytime shifts that closely follow overnight shifts are associated with a small but significant decrease in productivity for resident physicians early in their training, suggesting that trainees need more than 24 hours to transition

from an overnight schedule. While senior residents may be more adept at dealing with fatigue, more work is needed to determine if they suffer more subtle deficits from sleep deprivation.

12 Providers at Triage Are Associated with a Reduction in the Left Without Being Seen Rate

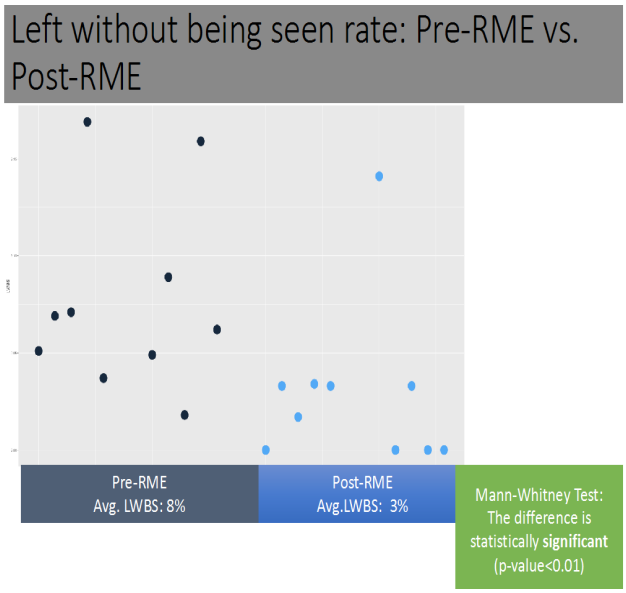
O'Connor RE, Riordan JP, Vinton DT, Hardigree SF, K Braden / University of Virginia, Department of Emergency Medicine, Charlottesville, VA,

Objective: Patients who leave prior to being seen by a physician are at risk for poor outcome. While the reasons for this can be multifactorial, one solution we explored is the stationing of physicians at triage. We conducted this study to measure the impact of pilot faculty providers in triage during peak hours to see if they could decrease the number of patients leaving prior to being seen, improve overall throughput and increase patient experience scores.

Design: We conducted a pre/post quality improvement project at an academic emergency department. Faculty staffed a five-bed rapid medical evaluation unit Monday-Friday from 1pm-7pm for two weeks. Providers saw patients on arrival during the triage process and initiated care. The left-without-being-seen rate was measured during the hours that the rapid medical evaluation unit was staffed. We compared this intervention to a historical control of like days and times from the preceding period. We performed statistical analysis using the Mann-Whitney U-test.

Results: A total of 2,000 patients were treated during the study period. The left-without-being-seen rate decreased from 8% pre-pilot to 3% post-pilot ($p<0.01$).

Conclusion: Faculty physicians at triage are associated with a decrease in the percentage of patients who leave without being seen.



13 Persistent Adverse Mental and Physical Health Outcomes Are Common among Women after Sexual Assault

Riviello R, Sullivan J, Bhatt K, Maltez B, D'Anza T, Bell K, Lechner M, Reese R, Buchanan J, Ho J, Rossi C, Nouhan P, Platt M, Phillips C, Black J, Reed G, McLean SA

Objective: Emergency departments around the world provide care to women who present for evaluation in the immediate aftermath of sexual assault. However, to date no prospective longitudinal studies of such women have been performed, and adverse mental and physical health outcomes after emergency care remain poorly understood. We report interim results regarding such health outcomes, using data from The Women's Health Study, the first large-scale prospective longitudinal study of women sexual assault survivors receiving emergency care after sexual assault.

Design and Method: Women sexual assault survivors ≥18 years of age who presented for emergency care within 72 hours of assault to one of the 13 leading U.S. sexual assault centers in the Better Tomorrow Network were enrolled. Protocol evaluation included assessment at the time of presentation for emergency care and follow-up visits one week and six weeks post-assault. The one-week and six-week questionnaires included assessments of pain and somatic symptoms (0-10 NRS) during the week prior to and six weeks after the assault. The six-week evaluation included the validated Patient-Reported Outcomes Measurement Information System (PROMIS) 8b depression, PROMIS 8b anxiety, and PCL-S DSM-IV post-traumatic stress questionnaires.

Results: Data from 254 patients were available at the time of analysis. Among participants with data available at the time of these analyses [mean(SD) age= 28(10)], the majority were European American [155/201 (61%)]. Six weeks after assault, clinically significant adverse health outcomes were common among participants. Moderate/severe depressive symptoms were present in 109/201 (54%), moderate/severe anxiety symptoms in 122/201 (61%), post-traumatic stress symptoms in 164/201 (82%), and worsening pain in 87/201 (43%) of women. Worsening pain was defined as an increase in pain of ≥ 2 units on a 0-10 numeric rating scale.

Conclusion: These results suggest that adverse mental and physical health outcomes are common and morbid among sexual assault survivors. Future analyses will include the full participant sample and later follow-up time points.

14 Opioid Prescribing: Where Should Academic Emergency Departments Focus Their Efforts?

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Objective: We sought to analyze the current state of opioid prescribing practices by trainees at an academic medical center, seeking a basis for future educational efforts.

Design and Methods: Our retrospective, observational study was performed at a single academic ED with an annual census of 61,289 visits. We extracted from the electronic health record (EPIC) all 6,962 opioid prescriptions attributed to the ED during 2015, excluding error prescriptions. Overall prescribing by opioid class was performed. Prescriptions written by EM trainees were categorized by post-graduate year (PGY) and compared to other prescribers. We analyzed prescribing patterns for recurrent visits.

Results: Of the 6,962 opioid discharge prescriptions, 5,515 were written by EM providers. No refills were provided. A mean of 15.4 pills (95% C.I. 13.9-16.9) were prescribed. ANOVA did not detect a significant difference between mean numbers of pills prescribed by EM providers. However, there was a significant difference between EM and non-EM prescribers. Less-experienced EM providers exhibited greater variability with regard to class and preparation. We found that 389 prescriptions were written for patients who received at least one other opioid prescription in the preceding 30 days. The number of pills dispensed decreased with increasing prior visits.

Conclusion: EM trainees prescribe short courses of opiates regardless of PGY. Patients returning to the ED received fewer pills on subsequent visits. Non-EM providers prescribe larger numbers of pills per prescription. This information will assist with future educational efforts to comply with new laws and guidelines.

15 A Systematic Review of Fitness Requirements for DMAT Teams

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Objective: In the United States, trained and credentialed teams of disaster responders may be rapidly deployed to assist with search and rescue efforts and to provide essential medical care. This fieldwork is physically and mentally demanding, placing team members themselves at risk. On prior deployments, many team members have sustained injury or illness requiring medical attention and, in some cases, extraction for off-site treatment. Our goal was to review the publicly available physical fitness requirements for disaster responders serving on disaster medical assistance teams (DMATs) in the U.S.

Methods: In order to describe the physical fitness requirements for DMAT responders we undertook a systematic review of all officially sanctioned DMAT teams in the U.S. that have publicly available websites We did a search engine query for "[State/territory] DMAT" and "[State/territory] disaster medical assistance team," reviewing the first three pages of results

Results: Of the 57 DMATs identified, 31 had publicly available websites. Of these, six publish fitness requirements and one team requires a self-administered fitness assessment. Following is an overview of these requirements: DMAT 1, requires an affidavit; DMAT 2 provides a "Fitness Guide" with an overview of basic health and nutrition concepts; DMAT 3 lists required functional capabilities; DMAT 4 lists required functional capabilities by team position; DMAT 5 requires a self-administered fitness test and affidavit; and DMAT 6 requires a Health and Safety Assessment Plan, Human and Environmental Risk Assessment (HSAP, HERA)

Conclusion: It appears that no minimum physical fitness standards currently exist for federal disaster responders in the U.S. Individuals may deploy with unknown physical liabilities, placing themselves and team members at risk of illness, injury, or mission failure. Given the hazardous nature of deployment to disaster zones, which are by their very nature resource-limited and may be physically remote from care, efforts should be made to develop and standardize minimum fitness standards for responders across DMAT units and roles. Remediation protocols for responders in violation of requirements should also be established. By mitigating the risk of illness or injury to disaster responders, the likelihood of mission success and provider wellness can be increased.

16 Energy Drink Exposures Reported to Texas Poison Centers: Adverse Incidents in Relation to Sales

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Objective: The consumption of "energy drinks" has steadily increased since their market debut. With widely varying formulations, caffeine content and consumption patterns, caffeine toxicity has been observed. However, previous reports using poison center data could not estimate the incidence of acute toxicity due to lack of a denominator

(i.e., sales). These studies failed to distinguish among the multiple unique products characterized as "energy drinks" (beverages, shots, and concentrates) and are confounded with caffeine-containing supplements (caffeine tablets, workout powders). Energy beverages dominate the market.

Design and Method: We performed a five-year database query of single-substance exposures to products described as "energy drinks" on the Texas Poison Center Network's database. We analyzed the data for product type, multiples of recommended serving size consumed (dose), adverse outcomes, management site, and demographics. Individual case report forms were reviewed for moderate or major outcomes or death. We obtained five years of Texas sales data for "energy beverages."

Results: From 01/01/10-12/31/14, we recorded 855 exposures to all products characterized as energy drinks (excluding those with ethanol or without caffeine). Of those exposures, 291 (34%) resulted in no or minimal effects and 417 (49%) were judged to be nontoxic or minor exposures not followed to a known outcome. Sixty-four (7.5%) were coded as moderate, and four (0.5%) major with no deaths. Serious complications included two self-limited seizures and one brief episode of ventricular tachycardia. Of the moderate and major cases, 32 (47%) occurred in children and adolescents. Common findings included nausea, tachycardia, and tremors. Energy beverages were associated with three moderate and no major cases, none in children less than 17 years. For all energy beverages, incidence rates of calls to Texas poison centers for moderate and major outcomes were 0.58 and 0.053 per hundred million units sold, respectively.

Conclusion: Serious toxicity can occur after excessive use of caffeine-containing products. With substantial variability of products described as "energy drinks" in poison center data, misperceptions of toxicity in post-marketing surveillance exist. Readers must consider the limitations and potential errors inherent in the data collection and coding of aggregate poison center data.

17 Implementation of a Flow Nurse to Increase Emergency Department Space Utilization

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Objective: Emergency department (ED) volumes continue to increase, with space often being a barrier to throughput. Most EDs have a resource nurse who serves many functions including maximizing space utilization in the ED. This study was performed to analyze if a dedicated "flow nurse" would affect utilization of ED space.

Design and Method: This was a before and after study, conducted at an academic hospital that has an ED with 55 beds and 20 sanctioned hallway spaces, seeing a volume of ~57,000 patients a year. The before phase (07/01/2016-08/30/2016) involved having a resource nurse who served multiple functions, only one of which centered on ED throughput. The after phase (09/01/2016-10/31/2016) featured a separate "flow nurse" from 11AM to 11PM Monday through Friday. Their responsibility centered on maximizing space utilization in the ED and ensuring efficient throughput. The outcome measure we compared was the number of minutes per hour where there were more than five patients in the waiting room, no patients inside the ED waiting to be seen by physicians, and less than 56 patients in the ED under evaluation. We termed this the utilization metric (UM). We used linear regression to test for a significant association between the UM and the presence of a flow nurse adjusting for confounders such as day of week, hour of day and month. Another outcome measure we compared was the left without being seen (LWBS) rate. We performed Fisher's exact test to test for significance.

Results: We compared a total of 1,032 hours, 516 in both the before and after group. The UM improved an average of 205 minutes for the 60 hours per week when a flow nurse was on duty. We performed linear regression with the UM as the dependent variable and with the independent variables of day of week, month, hour of day, and presence of flow nurse as covariates. Presence of flow nurse was significantly associated with an improvement of UM ($p < 0.001$), even adjusting for the other covariates. The other significant variable, hour of day, had a $p = 0.01$. During the before phase a total of 4,022 patients were seen, with 87 LWBS (2.2%). The after phase had a total of 4,346 with 110 LWBS patients (2.5%). Fisher's exact test yielded a $p=0.25$.

Conclusion: While the presence of a flow nurse did not significantly affect the rate of LWBS, it did significantly impact utilization of ED space to more effectively bring patients from the waiting room into the ED to be evaluated.

18 Bedside Ultrasonography for the Detection of Aortic Dissection in the Emergency Department

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Objective: Aortic dissection (AD) is a potentially life-threatening emergency requiring a high index of clinical suspicion. The most reliable diagnostic test is computed tomography (CT) angiography. Transthoracic echocardiography (TTE) has a lower sensitivity. We

developed an ultrasound protocol combining TTE with abdominal aorta ultrasound. The goal of this study was to determine the sensitivity of this protocol in the evaluation of aortic dissections.

Design & Method: This was a single-center retrospective review of patients evaluated in the emergency department (after our protocol had been established) from January 1, 2010, through March 31, 2017, who had a diagnosis of AD confirmed by CT angiography. Our protocol used three TTE signs to suggest AD: the presence of a pericardial effusion, an intimal flap, or an aortic outflow track size of >3.5 cm during diastole (measured from inner wall to inner wall within 2cm of the aortic annulus). In the abdominal aorta, the presence of an undulating intimal flap suggested AD. The presence of any of these findings was considered a positive study for dissection.

Results: A total of 441 ultrasounds were performed for suspected AD. We identified 27 patients during the study period (11 Stanford type A and 16 Stanford type B). Specifically, 26 of the 27 patients had at least one of the aforementioned findings. The only patient not diagnosed with bedside ultrasound had a Stanford type B dissection limited to the descending thoracic aorta. Furthermore, the presence of an intimal flap had a 100% positive predictive value for dissection. These criteria showed a sensitivity of 96.3% (95% CI 81.03% - 99.91%) (100% for type A & 93.75% for type B) and a specificity of 90.8% (95% CI 87.62% - 93.42%) for AD (Fisher's exact = 0, $p < .001$; $x2\ [1] = 155.06$, $p < .001$). Our protocol provided an overall negative predictive value of 99.73% (95% CI 98.21% - 99.96%) for both dissection types.

Conclusion: By combining TTE with abdominal aortic ultrasound, we were able to diagnose 96.3% of patients with an aortic dissection.

19 Are Emergency Department to Emergency Department Transfers at Risk for Diagnostic Errors?

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Objective: Emergency department (ED) transfers are common at academic medical centers. Many emergency medicine (EM) residencies are based at a tertiary care hospital that acts as the hub for a regional referral network. Little is known about the rate of diagnostic errors within this transfer population. Our goal was to determine the rate of diagnostic errors made in the receiving hospital in the transfer population at our institution in order to help inform and develop a resident curriculum around ED transfers.

Design and Method: This was a retrospective chart review with a primary outcome measure of diagnostic error in the ED transfer population. We defined diagnostic error as a discrepancy between the diagnosis made by the EM attending notes and the final diagnosis made by the admission team on discharge. The study was performed at an urban, academic tertiary care referral center with an affiliated three-year EM residency. All patients transferred to the ED between 07/2016 and 09/2016 were eligible. There were 1,785 ED transfer patients during this time period. We did a power calculation using an error rate of 0.13% (from previous published data from our institution for all-comers) with an expected error rate of 2% in the ED transfer population, requiring at least 102 cases for an alpha of 0.05% and power of 80%. We reviewed individual records of 143 randomly selected patients. Diagnostic discrepancies between these items were reviewed by two blinded attending physicians and adjudicated as errors if the diagnosis occurred within the first 24 hours of the hospitalization, if it was not documented for in the ED note, and if the two reviewers agreed it was a missed ED diagnosis.

Results: The average age was 60 for the population studied and 51% were male. Four errors were found among the 143 patients for an error rate of 2.8% (CI 0.1-5.5). Diagnostic errors from all-comer ED population to the ED transfer population were compared ($p= 0.002$). In this single tertiary center study, the diagnostic error rate was found to be 21 times higher in the ED transfer population than all-comers to the ED.

Conclusion: This higher diagnostic error rate could be due to multiple issues, including the fact that many patients are transferred to a tertiary care facility because they are medically complex or hemodynamically unstable. In this unique population an educational curriculum centered on the transfer population, anchoring bias, and cognitive debiasing strategies may improve care.

20 Human Cadaver vs Simulator Nerve Model for Ultrasound-Guided Regional Anesthesia Resident Education

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Objective: Ultrasound (US)-guided regional nerve blocks have been shown to be a safe and effective modality for pain relief. While it is a skill increasingly used by emergency physicians, there is limited data on how to teach this skillset. Our goal was to assess the efficacy of cadaver-based teaching of ultrasound-guided nerve blocks versus simulation (SIM)-based nerve models.

Design & Method: Residents of all post-graduate year levels (PGY-1 through PGY-3) were given a presentation on

US-guided regional anesthesia. They were then randomized to a cadaver or SIM nerve-block model to perform regional nerve blocks. We surveyed the residents to assess their comfort with performing ultrasound-guided nerve blocks, as well as the educational effectiveness of the session. The survey used a Likert scale from 1 to 7. We performed independent-sample t tests to assess if there were significant differences between the two groups.

Results: Twenty-seven residents participated in the session, 13 randomized into the cadaver group (six PGY-1, four PGY-2, and three PGY-3) and 14 into the SIM group (two PGY-1, five PGY-2, seven PGY-3). The average number of previous blocks was 2.07 in the cadaver group and 3.85 in the SIM group. There was no statistically significant difference in comfort level between the cadaver and SIM group (5.3 [SD = .48] vs. 5.9 [SD = .86]; t [25] = - 2.019, p = .054) in comfort performing US-guided nerve blocks after the session. Similarly, there was no significant difference in educational benefit (6.7 [SD = .63] vs. 6.9 [SD = .27]; t [15.9] = -1.251, p = .229).

Conclusion: There was no significant difference in comfort level between the cadaver and SIM groups. This finding may be confounded by the fact that the SIM group contained more PGY-3 residents and a greater average number of blocks performed prior to the session. However, this data is reassuring given that SIM models are more cost effective and easily accessible for educational purposes. Furthermore, residents found the activity to be extremely beneficial with a rating of 6.8, echoing the necessity of incorporating this into curricula.

21 Life after Trauma: A Survey of Trauma Centers Regarding Acute and Post-traumatic Stress Disorders

Guess KE, Fifolt M, Austin E, Adams R, McCormick L

Objective: Patients who suffer a physical trauma are at risk of developing acute stress disorder (ASD) and/or post-traumatic stress disorder (PTSD). Level I trauma centers have an unparalleled opportunity to assess and educate trauma patients and their caregivers about these disorders; therefore, the purpose of this study was to determine whether assessment and educational programs for ASD and PTSD are present at Level I trauma centers in the United States. Additionally, this study strived to identify the protocols employed at these institutions, the health professionals involved, and levels of training provided to resident physicians and nurses regarding these disorders.

Methods: In March and April 2017, we surveyed electronically the trauma program managers and trauma medical directors at 209 adult and 70 pediatric trauma centers. The survey addressed the following items: populations assessed or educated for ASD and PTSD; timing of assessment or education programs; healthcare professionals involved; specific tools used; and education offered to resident physicians and nurses. Hospital characteristics collected in the survey instrument included the date of establishment, number of hospital beds, annual number of trauma admissions, region in which the hospital is located, residency/fellowship programs offered, and certification status by the American College of Surgeons, state guidelines, or both. This study was declared exempt by the institutional review board.

Results: We received responses from 39.7% (N=84) of adult and 41.4% (N=29) of pediatric trauma centers. Of the responding institutions, 16.0% of adult and 44.8% of pediatric hospitals reported having a written protocol to assess patients for ASD, PTSD, or both. Additionally, 8.8% of adult and 39.3% of pediatric hospitals reported having a written protocol to educate patients about ASD, PTSD, or both. For caregivers of trauma patients, 3.8% of adult and 25% of pediatric hospitals reported having a written protocol to assess for ASD, PTSD, or both. We found that 8.6% of adult and 18.5% of pediatric trauma centers reported having a written protocol to educate caregivers about ASD, PTSD, or both.

Conclusion: A minority of U.S. Level I trauma centers offers assessment or educational protocols for these disorders. Left unchecked, the personal repercussions and societal costs continue to escalate.

22 Association Between Post Graduate Year and Adverse Events/Error of Emergency Department Admissions

Solano J, Ilg A, Bilello L, Chiu DT/ Beth Israel Deaconess Medical Center, Department of Emergency Medicine, Boston, MA

Objective: EM residents are supervised by attending physicians when they work in the ED. Therefore the Post-Graduate Year (PGY) level should not influence care. Unexpected floor to ICU transfers can often be an indication for an adverse event or error (AEE). These transfers have been shown to have higher mortality than patients admitted directly to the ICU. Floor to ICU transfer have been monitored as an area of quality improvement. It is unclear if the level of training of the EM resident correlates with AEE in the floor to ICU transfer population.

Design and Method: This retrospective study was done at an urban, academic tertiary care referral center with an affiliated 3 year EM residency. All patients presenting to the ED between 07/01/2012 to 06/30/2015 who had a floor to ICU transfer in the first 24 hours of ED admission had a review by a member of the QA committee. These cases

are automatically flagged for review by the ED information management system. The primary outcome measure is AEEs as adjudicated by the whole QA committee for those cases that screened positive by individual reviews. Adverse events are defined as events or circumstances that caused patient harm. Errors were defined as patient care that violated the standard of care as determined by the QA committee. The variable of primary interest is EM PGY level. The expected number of AEEs per EM class was calculated by taking the total number of AEEs and dividing by 3. Chi squared test was performed to test the null hypothesis that there is no difference between EM PGY level and AEEs.

Results: A total of 1769 cases were screened as floor to ICU transfers within 24 hours of the ED. Of these 29 were attributed to be an AEE due to EM residents by the QA committee. This represents an AEE rate of 1.6%. Eight were by PGY1, 19 were by PGY2 and 2 were by PGY3. Chi squared test yielded a $p < 0.001$, rejecting the null hypothesis.

Conclusions: There is an association between PGY level and AEEs of floor to ICU transfers. This is likely due to the increased acuity and complexity of patients seen by the PGY 2 resident. However it may be due to decreased supervision of PGY2 residents and may present an opportunity for improvement.

23 Door to Balloon in Patients with ST Elevation Myocardial Infarction: Minding the Gap

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Background: Delayed diagnosis in patients with ST elevation myocardial infarction (STEMI) still represent a blind spot in the assessment of quality healthcare indicators.

Objective: We aimed to evaluate a "fast-track" intervention intended to shorten door-to-balloon waiting times in patients presenting to emergency department (ED) triage with STEMI.

Design & Method: In 2016, a "fast-track" intervention program for patients with chest pain was implemented in the ED at Rambam Health Care Campus. We determined a set of clinical guidelines for patients' assessment as follows: 15 minutes to triage, 10 minutes to electrocardiogram (ECG), 40 minutes for physician assessment, 60-minute waiting time for decision and 90 minutes to catheterization lab (door-to-balloon time). The program was comprised of four steps:

1. Laying the patient immediately. Or: Laying the patient down immediately
2. Marking the chart with a dedicated sticker (Figure 1).
3. Assessing time lags according to defined clinical guidelines.
4. Signing of the ECG and the dedicated sticker by a physician (Figure 2).

We conducted a retrospective-archive study between January 2015 and December 2016 to evaluate the intervention program achievements. We compared the adherence to clinical guidelines between all STEMI patients (n=140) who presented to the ED before (i.e., in 2015, n=60) and after (i.e., in 2016, n=80) implementing the intervention. We used a lift chart and receiver operating characteristic (ROC) curve to determine the optimal time lags in the ED for achieving the objective of 60 minutes for evaluating the patients in the ED.

Results: Table 1 presents the adherence to time lags pre- and post-intervention. After implementing the intervention more patients reached ECG evaluation within 10 minutes (57.5%) compared to pre-intervention (40%) ($p=0.04$); and more patients remained in the ED less than 60 minutes (87.5% and 63.3%, respectively, $p=0.01$).

Table 2 describes the time lags in relation to clinical guidelines before and after intervention. It clearly appears that when comparing post- to pre-intervention, the time lags (in minutes) were of shorter duration after the clinical guidelines were put in place.

Figure 3 shows that patients who were treated in the ED according to the three clinical guidelines (15 minutes for the nurse, 10 minutes for ECG and 40 minutes for the physician), had the largest probability to uphold the 60-minute waiting time in the ED (AUC=0.975).

Conclusion: Implementation of "fast-track" management for patients with chest pain to provide early diagnosis of STEMI shortened the waiting time for catheterization. The findings call for implementing programs that identify patients at risk for STEMI in ED triage and begin interventions as quickly as possible to reduce time lags for reperfusion for these patients.

Figure 1.

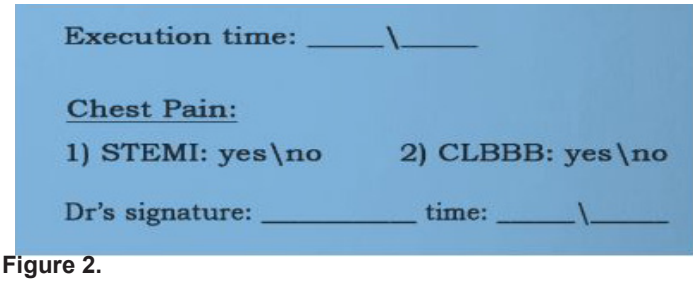


Figure 2.

Table 1. Adherence to clinical guidelines in patients with STEMI (n=140) before and after the intervention program.

Clinical guidelines	Adherence to time lags (n=140)		Improvement difference	P value
	Pre intervention n=60	Post Intervention n=80		
Triage within 15'	43 (71.7)	64 (80.6)	8.9	0.23
ECG within 10'	24 (40)	46 (57.5)	17.5	0.04
Physician assessment within 40'	44 (73.3)	66 (82.6)	9.3	190.
Total waiting time in ED of 60'	38 (63.3)	70 (87.5)	24.2	0.01
Door to balloon time within 90'	37 (61.7)	56 (70)	8.3	0.30

Table 2. Time lags in relation to clinical guidelines before and after intervention.

Clinical guidelines	Adherence to time lags (in minutes)		P value
	Pre intervention	Post intervention	
Triage			
≤15'	7.65±3.84	7.06±4.69	0.50
>15'	27.35±14.34	22.81±5.6	0.20
ECG			
≤10'	6.95±2.74	5.69±2.83	0.10
>10'	24.55±14.21	20.26±7.29	0.12
Physician assessment			
≤40'	20.48±10.37	18.83±10.28	0.41
>40'	70.25±30.24	52.86±13.51	0.05
Total waiting time in ED			
≤60'	37.93±11.54	32.91±14.8	0.10
>60'	126.18±59.63	72±9.67	<0.001
Door to balloon			
≤90'	66.88±17.2	60.57±19.63	0.12
>90'	164.61±53.89	125±32.25	0.01

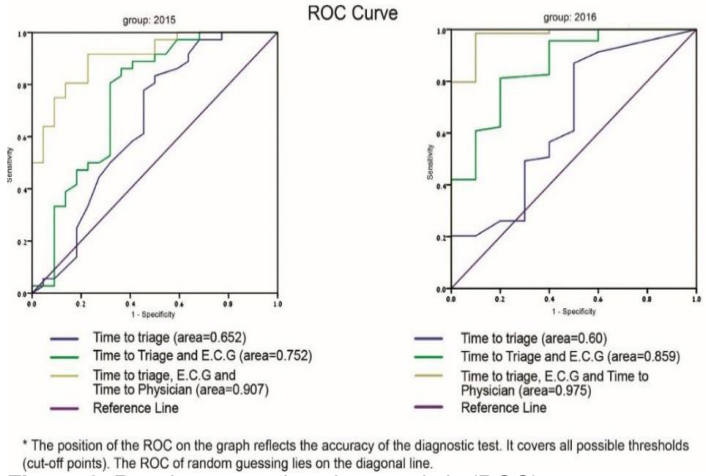


Figure 3. Receiver operating characteristic (ROC) curve

24 Analysis of Patient Dispositions by Hour of Shift for Emergency Physicians

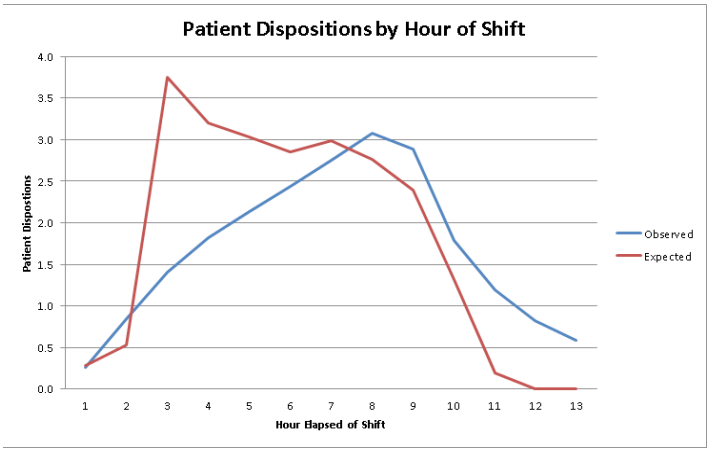
Chiu DT, Joseph JW, Hyde L, Sanchez LD/ Beth Israel Deaconess Medical Center, Department of Emergency Medicine, Boston, MA

Objective: Emergency departments (ED) across the country continue to see increasing volumes with higher acuity, which can have consequences on ED throughput. One major metric of throughput is the time to decision or disposition time. Once a patient is seen, evaluated, and with a completed work-up, a decision to find the appropriate disposition becomes necessary to generate throughput and open up the bed for the next patient. We performed this study to analyze how decision times are distributed throughout the length of an ED shift.

Design and Method: We conducted the study at an academic hospital with an emergency medicine residency where resident shifts are matched with attending shifts. Shift lengths are eight or nine hours. We performed a retrospective analysis from 07/01/2015 to 06/30/2016 for a total of 2,190 shifts. The number of patient dispositions (PDs) by hour elapsed since shift started was recorded. Dispositions included were discharge, against medical advice, inpatient, or observation bed requested. Eloped patients and left without being seen were excluded. We calculated the expected number of PDs by shift hour by taking the median time to disposition (stratified by ESI) and adding it to the time when the patient was seen by the attending. A chi-squared test was performed on the data.

Results: The first two hours had a similar number of observed PDs (0.3 and 0.8) when compared to expected (0.3 and 0.5). The third through seventh hour had a smaller number of observed PDs (1.4, 1.8, 2.1, 2.4 and 2.8, respectively) compared to expected (3.7, 3.2, 3.0, 2.9 and 3.0, respectively). From the eighth hour onward, there was a larger number of observed PDs (3.1, 2.9, 1.8, 1.2, 0.8 and 0.6, respectively) compared to expected (2.8, 2.4, 1.3, 0.2 and 0.0, respectively). The p-value of the chi-squared test was <0.001, representing a statistically significant difference.

Conclusion: The observed number of PDs by hour of shift differs significantly from the expected number. Whereas the observed data showed PDs toward the later part of the shift, the expected data anticipated more PDs toward the early and middle portions of the shifts. Many factors could contribute to this difference, including the desire to have dispositioned patients prior to sign-out to decrease the burden for the oncoming physician. Other factors might include a non-linear degradation in provider efficiency as the number of hours elapsed during a shift, as well as the number of tasks that had to be performed.



25 Chief Complaints Pre- and Post-2015 Earthquake in Rural Nepal

Jain A[1], Grundmann N[1], Paudyal R[2], Parajuli A[2], Arquilla B[1]/ [1]SUNY Downstate Medical Center, Brooklyn NY
[2]Himalayan Health Care Inc, Kathmandu, Nepal

Introduction: Characterization of presenting complaints is key to establishing locally appropriate healthcare systems, resources, and facilities. Little data exists on the changes in chief complaints (CC) before and after a natural disaster. This study characterized the baseline CC of a village in rural Nepal and determined how these complaints changed immediately post-earthquake.

Methods: We conducted a retrospective analysis of CC logs from Himalayan HealthCare (HHC), specifically from their work in the Lapa village. HHC provides free services in rural locations and records presenting complaints. This group was present before and after the April 25, 2015, earthquake. We aggregated data from physician logs and trends between presenting complaints extracted.

Results: Overall, 1,227 patients were seen, evaluated, and treated by HHC. During the 2.5-day service trip pre-earthquake, a total of 366 patients presented for care (146.4 patients/day), with gastrointestinal (GI) (20%), orthopedic (13%) and ophthalmologic (10%) issues comprising the three most common CC. During the five-day post-earthquake trip, 861 patients presented for care (172.2 patient/day). Primary CC were GI (38%), orthopedic (15%) and respiratory (7%). There was a significant change in CC for diarrhea, which rose from 6% to 23% pre-and post- earthquake, respectively. Only four other diagnoses increased in frequency: GI (excluding diarrhea), non-orthopedic trauma, orthopedics, and neurology (which was driven by headaches and migraines).

Conclusion: As expected, we found an increased demand for trauma and orthopedic services after the 2015 earthquake. There was a significant increase in diarrheal disease, likely from the disruption of infrastructure, i.e., safe ingestible water, damaged toilets leading to open defecation and poor plumbing. More studies are required to better characterize the needs in these remote locations to strengthen the infrastructure and health systems to be more resilient in such disasters.

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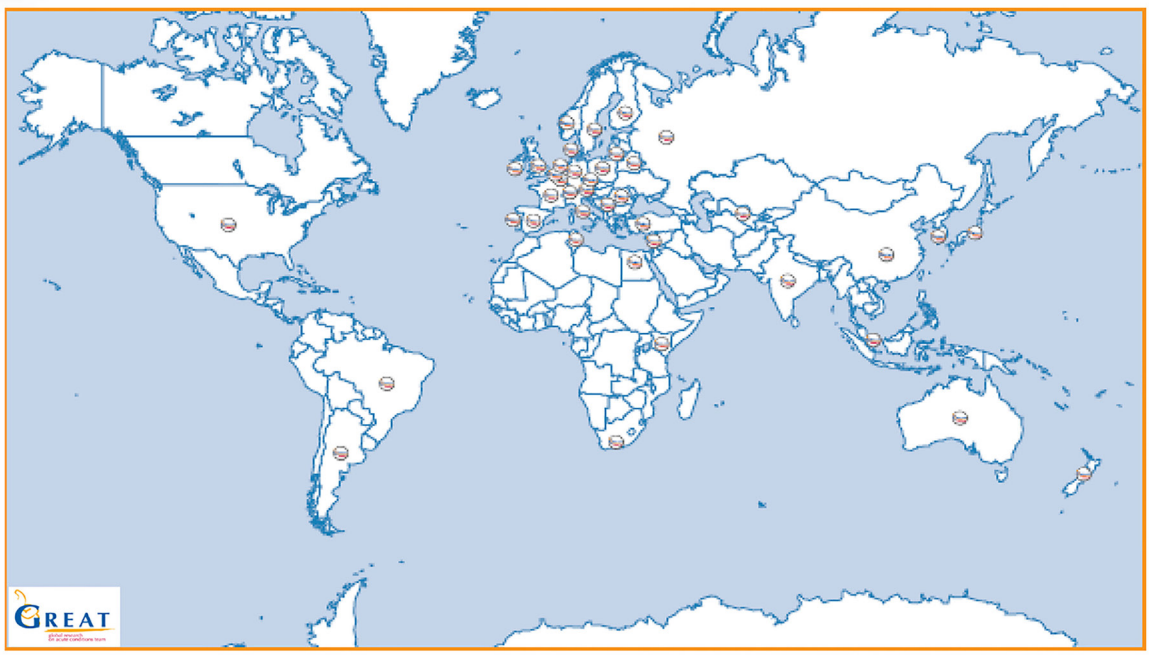

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Prof. Lee A. Wallis, MBChB MD FCEM
Thursday, 7 September

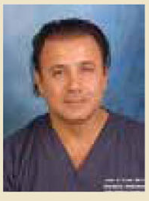
PLENARY SPEAKERS

Kevin Rodgers, MD FAAEM
Friday, 8 September:
17:25-18:00
The Business of Emergency Medicine

Eveline Hitti, MD MBA FAAEM
Saturday, 9 September:
11:25-12:00
Leaning Out: Gender, Medicine and Tethered Potential

Amal Mattu, MD FAAEM
Friday, 8 September:
11:25-12:00
Groundbreaking Cardiology Articles that should Influence or Change Your Practice

James Ducharme, MD
Sunday, 10 September:
11:25-12:00
Pain Relief, Patient Satisfaction and Addiction: Optimal Care Despite Competing Concerns



Amin Antoine N. Kazzi, MD MAAEM FAAEM
Saturday, 9 September:
14:00-14:35
Standards to be Required to be Designated as Specialist in Emergency Medicine

W. Frank Peacock IV, MD FACEP FACC
Sunday, 10 September:
17:25-18:00
Hit The Road Jack! What the High Sensitive Troponins and Accelerated Diagnostic Protocols Mean for Your Emergency Department

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