Innovations in EMS Education

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Innovations in EMS Education

Presented here are the 18 abstracts from the sixth annual “Innovations in EMS Education” poster session, held at the NAEMSP Annual Meeting in Austin, Texas in January 2019. The session accepts submissions on all aspects of EMS education for all types of providers, but some preference is given to submissions on the education of EMS fellows. All submissions were reviewed and scored in a blinded fashion by a selection committee made up of representatives of the NAEMSP Education Committee, Program Committee, and Council of EMS Fellowship Directors. The order of listing is random.

1. Use of the Communities of Practice Model to Educate Providers from Diverse EMS Agencies on a New Pediatric Protocol
Jennifer N Fishe, Kyle Fratta, Jennifer F Anders
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The PDTree is an evidence-based tool for EMS pediatric destination decisions. The PDTree tool is currently being pilot tested in three diverse EMS agencies: urban Baltimore City, which contains a unionized career workforce; suburban Prince George’s County, which is a mixed career/volunteer workforce with over 40 stations; and rural Queen Anne’s County, which is a mixed career/volunteer workforce and operates in a county without a hospital. Our group used the community of practice social learning model for the educational component of the PDTree implementation. Communities of practice are groups of individuals who interact together based on a shared, common purpose. The interactions within the community of practice disseminate knowledge and innovation. The PDTree project first engaged this learning model with pre-protocol rollout EMS provider focus groups. According to the model, the shared interest was “the right place, at the right time,” the community was EMS providers and pediatric patients, and the practice was EMS destination decisions. Focus groups identified that EMS providers were already triaging children’s destination facilities based on perceived level of pediatric care, and that EMS providers strongly desired to transport children directly to definitive care and avoid secondary transport. Those themes framed the educational material in the rollout of the PDTree tool at the three agencies, working with a total of 72 stations. An educational video framed the evidence behind the PDTree at the local level to contextualize the use of the tool for providers. Video voiceovers were scripted to pose questions as “reading the tool, what decision would you make?” rather than “what does the tool tell you to do?” In keeping with the community of practice model, station visits were made by prehospital providers who were part of the PDTree study team. During station visits a ‘PDTree champion’ was identified: an enthusiastic EMS provider who could serve as a station liaison during pilot testing. The PDTree educational rollout has received positive feedback, which we attribute to the community of practice model. EMS medical directors, fellows, and other agency leaders should use the community of practice learning model for education and implementation efforts.

2. Slideshow to Smartphone: Maximizing Paramedic Educational Reach Via Podcast
Casey Patrick, Jordan Anderson, Kevin Crocker, Andrew Adams, Robert Dickson
Montgomery County Hospital District EMS - Conroe, TX

Background: We developed a paramedic-focused podcast series to address specific educational needs in our large, ground-based EMS agency. Maintenance of an accessible and well-attended education program became increasingly difficult following consistent company growth. The task of managing traditional classroom lecture time for approximately 250 paramedics and 1000 first responders became nearly impossible. Throughout 2017, a live lecture series with video conferencing technology was
initially attempted, but attendance was consistently below 20%. Implementation: In late 2017, we decided to create and self-produce the podcast series in an effort to better reach our employees at a time and place of their own choosing. The primary audience is our field paramedics and first responders, with an emphasis on covering our most recent protocol updates and clinical initiatives. These easily consumable podcasts have also provided an opportunity for spaced repetition following our separate mandatory continuing education sessions. In addition to targeting protocol specifics, core EMS clinical topics applicable to all prehospital provider training levels were emphasized during production and recording. Results: Our first episode was released in March 2018. Episode type has included both direct lecture format and interviews with EMS thought leaders. We have also been able to address current prehospital issues, such as first responder fentanyl exposure, with rapid podcast production and release. The podcast series has even provided a platform for communication of protocol implementation directly to our crews. In the future, we plan to gather formal feedback using a mandatory employee survey in an effort to better understand listening patterns and desired content. Over 20 episodes have been released, which have garnered over 10,000 total downloads. The deployment of a novel didactic offering via podcast medium appears to have significantly improved paramedic educational engagement within our service.

3. Case Methodology for EMS Education
Joseph Marcus Grover, Jane H Brice
University of North Carolina

ACGME-accredited EMS fellowship curricula must integrate a significant number of hours of didactic material within a condensed academic year. Developing innovative methods to actively engage fellows in decision-making during their educational sessions could provide fellows with a safe and protected environment for practicing administrative skills and receiving feedback. Using best practices from MBA programs, the University of North Carolina EMS Fellowship Program introduced case methodology as a new instruction technique to cover core content during the 2018-2019 academic year. Novel Education: Case methodology, as an education method, is commonly used in MBA curricula. This teaching method provides students with the ability to learn management skills in a practical manner while developing a set of recommendations from each case. Case methodology presents the student with a current issue from the news or local practice and demands that the student explore the major issues of the case, research best practices, rules, and current research, and then develop a set of recommendations based on the research and data analysis. The UNC EMS fellowship has implemented case methodology as a core part of the curriculum. An illustrative case explored the use of ketamine for sedation of combative behavioral patients. Fellows were presented with the scenario of implementing ketamine for behavioral sedation as a proposed modification to the state protocols. Within the case, fellows were directed to address a number of key questions in their research, similar to the basic core content requirements provided to lecturers prior to their presentations. Fellows were then expected to conduct outside research on the case and come prepared to discuss the case and their findings and recommendations. They were also expected to evaluate the related EMS protocols and, if desired, amend the protocols to include or exclude ketamine for behavioral patients. Each fellow presented findings and recommendations at a regularly scheduled weekly didactics session. Fellowship faculty proctored the session to ensure all of the needed core content on the topic was covered. While no method of instruction is perfect, by diversifying our techniques as educators can hopefully enhance the learning opportunities of our fellows.

The statewide New Jersey EMS Fellowship uses a VoIP (Voice over Internet Protocol) phone system for all our medical oversight calls. This allows us to have multiple phones ring at the same time with all fellows and faculty answering. All incoming and outgoing VoIP calls are recorded. Our EMS fellows, EM residents, and EM attendings answer approximately 100 ALS console calls a day from paramedics. The EMS fellows carry mobile phones answering calls from anywhere in the world. Paramedics have four different call options, with numbers for routine medical oversight, priority, pediatrics, or pronouncement. Those calls are then sent to either our EMS fellowship mobile phones, adult base station, pediatric base station, and/or nursing line. Priority calls ring primarily on EMS physician phones and consist of patients who need RSI, or trauma, STEMI, or stroke notification. EKGs that are transmitted are visible on our base station computer as well as our mobile phones. The medical oversight group ranges from monitor and transport ALS calls to already performed standing orders calls. This group rings first in the adult base station and then rolls over to a mobile phone if it is not picked up by a physician after three rings. The phones ring simultaneously so anyone available can pick up the phone. All fellows carry the console phone with them for the academic year. If a paramedic unit needs to recontact a particular EMS physician, he or she can simply dial a four digit extension to obtain the same doctor. The pronouncement group is for confirmed pronouncements. The pronouncement line rings at a nursing mobile group then all the other phones including the base station. This system allows us to monitor, record, and train our EMS fellows and EM residents. When we have a difficult medical oversight call we can retrieve the recording and review with all parties involved immediately. The same recordings are used to train next year’s new EMS fellows with faculty oversight. This system allows us to provide quality assurance for EMS and to provide real-time feedback to the EMS fellows, meeting ACGME EMS fellowship milestones.

5. Efficacy of Distance-Based EMS Education in a Low-Resource Country

Benjamin Weston, Lawrence Seymour, Rigo Montejo
Medical College of Wisconsin

Introduction: Road traffic accidents are a major cause of morbidity and mortality in low-resource countries. Compounding this issue is a lack of advanced medical training in these regions and a paucity of developed emergency medical services. To help address this need, a distance-based emergency medical services educational product was developed with the goal of advancing medical training and potential EMS fellowship opportunities in resource-poor areas. If successful, this project could lead to the development of a more robust distance-based curriculum and potential EMS fellowship opportunities in low-resource countries. Methods: This prospective before and after study evaluated the knowledge acquisition and technical effectiveness of an online-delivered, distance-based EMS lecture. Volunteer medical providers at Karl Heusner Memorial Hospital in Belize City, Belize were invited to voluntarily participate. Participants were given a pre-test consisting of 15 questions regarding ambulance and emergency vehicle safety. This was followed by a 45-minute lecture presented online synchronously on the same topic, followed by a post-test consisting of the same questions. One month later, a delayed post-test with the same questions was administered to assess knowledge retention. Additionally, after the lecture a questionnaire was distributed to assess technological effectiveness of the format. Results: Nine participants completed the pre-test and immediate post-test, and nine completed the 1-month follow-up test. Significant improvement was noted between the average scores of the pretest as compared to the post-test (32.5% vs 74.1%, p <0.00001). Significant improvement was
maintained with the delayed post-test as well as compared to the pretest (32.5% vs 57.0%, p 0.00265) Overall, the participants approved of the technical aspects of the project and felt that this was an appropriate tool to help translate learning material. The average score for the technical aspects of the project ranged from a 3.22 to 3.78 on a scale of 1-5. Conclusion: This synchronously presented distance-based EMS educational program showed significant gains in both immediate and delayed knowledge acquisition among a small sample size. These results show promise that an online distance-based education is a viable option for EMS-based continuing graduate medical education and EMS fellowship opportunities in low-resource countries.

6. Development of the RESCUER Mnemonic for EMS Bedside Teaching and Feedback (Based on Twitter-Sourced Best Practices from Emergency Medicine Physicians and Emergency Medical Services Providers)
Seth M Kelly
University of Maryland Medical Center

Residents and fellows in emergency medicine (EM) training programs develop skills and comfort in teaching junior residents and medical students. This does not always transfer to the teaching of prehospital providers, who practice in a different clinical environment under a restricted scope of practice. Emergency medicine trainees are often the first physicians encountered in the emergency department (ED). This encounter represents a unique opportunity for collaboration with paramedics, emergency medical technicians, and firefighters to improve their clinical skills. Using a personal Twitter network of more than 1,500 followers as well as retweets from EM/EMS organizations, a public, online conversation was initiated. Experiences were shared and best practices were proposed by EM physicians and EMS providers across the United States and internationally. Participants in the conversation discussed the following tweet: “EM MDs- how do you approach providing patient care feedback to EMTs and medics? EMS- what do you want docs to know (suggestions) about providing feedback, best/most helpful approaches?” A number of themes surfaced in the responses, which were reviewed for content but not for attribution to any individual. A mnemonic for bedside teaching and feedback between EM physicians and EMS providers encompassing these general themes was developed. The RESCUER mnemonic represents seven elements: R (relationship – build a working relationship during every encounter in the ED), E (explain – make the context of the teaching or feedback session clear to the EMS provider), S (synthesize – describe what was observed about the patient based on the EMS provider’s report and patient care decisions), C (critically evaluate – evaluate the key elements of the patient case in the context of relevant EMS protocols), U (understand – take the time to appreciate the unique constraints of practice outside of the ED in the prehospital setting prior to teaching or providing feedback), E (explore – identify ways in which the prehospital provider can continue to learn through patient follow-up, further study, or research), and R (respond/receive – the physician should also allow the EMS provider to respond to the teaching/feedback and should receive feedback from the EMS provider as well, when appropriate).

7. Serious Gaming for Mass Casualty Triage and Disaster Management
Clare Francisco Wallner, Paula Sneath, Teresa Chan
McMaster University

Problem: Mass casualty incidents (MCI) are complex events that most paramedics encounter only a few times in their careers. Triaging and managing multiple patients during an incident requires different skills than those typically practiced by prehospital providers. Simulation and drills can provide an opportunity to practice those skills, but are costly and resource-intensive while only allowing a few providers to be in a triage or leadership role. It is important to find engaging and sustainable methods
for teaching MCI triage and initial scene management. Approach: Serious gaming has gained momentum in medical education. Using an iterative process, the authors have developed and are testing a card game based on the previously published GridlockED board game. The game provides a focused learning experience to allow providers to practice initial triage of multiple injured patients as well as manage patient flow from the scene to area hospitals when faced with limited resources. It uses an initial team of two paramedics, one who is primarily responsible for initial patient stabilization and triage, the second who is primarily responsible for overall scene management and patient flow to regional hospitals. Up to four ambulances are available as well as two destination hospitals - one a major trauma centre and the second with variable capabilities. The flow of the game allows for deliberate practice of MCI triage, such as START, as well as management of limited resources that can result in hospitals being overwhelmed by patients or offload delay of ambulances. The scenarios for the game are based on declared disasters that have occurred in Canada from 2007 to 2017 that resulted in fatalities and injuries. Outcomes: This game is being tested with paramedics as well as emergency medicine learners to determine usability, engagement, fidelity, as well as usefulness in teaching MCI triage and patient-flow concepts. Next Steps: Curriculum can be expanded to teach incident command, practice of hand-off as teams of players take turns leading the game, as well as potentially connected to other versions of GridlockED to further explore the relationship between scene management and patient flow within receiving hospitals.

8. Emergency Medicine on the Fireground
Jeffrey Lubin, Chadd Nesbit, Jessica Mann
Penn State Health Hershey Medical Center

Introduction: The fireground is an unpredictable and unique environment that may create substantial risks for civilians and firefighters. Training in fireground operations can help emergency physicians understand the role of EMS providers at fire scenes, including care and transport of civilian fire victims, management of rehabilitation, and treatment and transport of ill or injured firefighters. Methods: A half-day exercise was designed for emergency medicine residents encompassing a range of knowledge and skills related to fire scene care and subsequent management. The goals of the course were to teach about the role of EMS on fire scenes, identify the causes of firefighter injuries at fire scenes, understand the complexities of the clinical management of burn patients, discuss the most common toxic gases at fire scenes, and review concepts regarding exertional heat illness. First, small groups of learners rotated through five stations designed to deliver core knowledge: (A) the use and limitations of PPE/SCBA, (B) burn assessment and escharotomy, (C) management of the burned airway, including fiberoptic Intubation, (D) fire scene rehab and exertional heat illness, and (E) toxic gases on a fire scene. These stations were a combination of hands-on learning and lecture. After the initial didactics were complete, residents donned PPE that had been previously fitted. Using a one-to-one partnership with local fire department crew members and the resources of a public safety training academy, multiple iterations of scenario-based learning were run. These included: (1) a smoke-filled building with a lost infant requiring resuscitation, (2) a surprise firefighter down scenario at a drill tower, (3) an active burn simulation with subsequent airway management that required a surgical cricothyrotomy, and (4) ED management of a patient requiring burn center transfer. Residents completed “entry” and “exit” tickets to qualitatively assess their experience. Results of these assessments suggested a marked improvement in all areas of the residents’ understanding of fire scene operations and the management of burn patients. Conclusions: This program for emergency medicine residents, including didactic sessions followed by an immersive experience, resulted in improved awareness of the issues and concerns in dealing with fireground incidents and the management of burn patients.
9. EMS Gone Wild: Creation and Implementation of a Combined EMS and Wilderness Medicine Track for Emergency Medicine Residents
Rachel Munn, Geoff Comp, Judd Shelton, Renee Moffitt, Robert Lowe, Eric Cortez
Doctors Hospital

Background: Emergency medicine (EM) is an expanding specialty and the desire for sub-specialization has become more prevalent in recent years. Developing a niche can provide a cornerstone for career development and professional advancement, especially in the academic EM realm. In the private sector, sub-specialization may also serve to reduce burnout and increase career longevity. Therefore, an inherent function of EM residency programs is to provide learners the opportunity for sub-specialization during postgraduate training. Targeted residency tracks are an option residency programs may employ to provide such opportunities. This abstract describes the creation and implementation of a combined emergency medical services (EMS) and wilderness medicine educational track for EM residents at a four-year, ACGME-accredited training program.

Track Description: The combined EMS and wilderness medicine track was created and developed by residents with close EMS faculty supervision. The program was implemented in July 2017 and includes second, third, and fourth EM residents. The curriculum is a three-year, longitudinal program developed from the national EMS core content and fellowship curriculum. Wilderness medicine core content was integrated into the EMS curriculum. Monthly reading assignments and small group discussions are supplemented with evidence-based medicine reviews and hands-on experience with common prehospital procedures. Participants gain progressive responsibilities throughout their participation and develop educational content, participate in quality improvement and research projects, and ultimately serve as assistant medical directors for EMS agencies.

Novel Education: The EMS and wilderness medicine track provided two venues for novel education of EM residents. First, resident-led track development provided useful experiences in curriculum development and implementation. Second, by successfully combining EMS and wilderness medicine, our EM residency program was able to provide over 20% of our trainees sub-specialization experience incorporated into traditional residency requirements.

Conclusion: The EMS and wilderness medicine track has been an efficient and effective means for supplementing traditional EM residency education and promoting sub-specialization for our trainees. EMS and wilderness medicine overlap in several areas, and many trainees have a vested interest in both. This facilitated an easy integration into a combined sub-specialization track.

10. Creation, Training, and Simulation of a Field Extracorporeal Membrane Oxygenation (ECMO) Team
Leonard S Weiss, David Palmer, Jeremiah Escajeda, Mark Pinchalk, James Dlutowski, John Mooney, Adam Palmer, Scott Studebaker, Tom Goode, Francis X Guyette
University of Pittsburgh

Background: With an annual incidence of over 350,000 and 39.5% occurring in public places, out-of-hospital cardiac arrest (OHCA) is a prominent public health dilemma. Integrating layperson CPR and public-access defibrillation programs into community emergency response has shown potential for improving OHCA outcomes. However, even with layperson intervention and prompt professional EMS response in a witnessed event, the underlying pathology may be refractory to standard care. Some evidence suggests that early initiation of veno-arterial (VA) ECMO in select patients with refractory pulseless cardiac rhythms may improve survival.

Innovation: At our institution, in coordination with emergency medicine, critical care medicine, cardiothoracic surgery, and EMS, we have implemented an ECMO-CPR (ECPR) alert to prepare an ECMO team for arrival of an OHCA patient meeting specific inclusion criteria. Our resident and fellow emergency medicine physicians, faculty EMS physicians, and paramedics are trained to identify patients during the first 10 minutes of prehospital resuscitation,
activate the alert, and expedite transport to the ECMO facility with a mechanical CPR device in place. To expand this system, we developed a novel training program to create a field ECMO team utilizing prehospital physicians, EMS partners, perfusionists, and nurses. The EMS physician was responsible for cannulating the patient and operating the circuit. One paramedic group was trained to assist the physician, preparing the patient and equipment in sterile fashion. Another paramedic and first responder group continued high-performance resuscitation and established mechanical CPR. We conducted a simulation at an academic ECMO conference, using a high-fidelity gel model for cannulation, and multi-angle photography and videography. The simulation demonstrated a student athlete suffering a witnessed OHCA refractory to standard ACLS and included sequential resuscitation by laypeople, first responders, paramedics, and finally, the field ECMO team. Cannulation and pump activation were achieved in 28 minutes. Conclusions: An integrated field ECMO team may be an approach to initiating advanced care in select refractory OHCA patients and can be refined using a training and simulation model. Despite having an adept 24/7 physician response program in our system, we anticipate limitations with respect to coordinating policies and procedures amongst several regional institutions and EMS systems.

11. Utilization of a Mobile Medical Trailer as a Novel Approach to EMS Fellow Mass Gathering Medical Education
Daniel O'Donnell
Indiana University School of Medicine

Mass gathering medicine education is a core component of EMS fellowship training. Teaching fellows the skills necessary to provide medical care to large groups and events not only improves the overall service to the public but allows for additional onsite medical resources in the event of a major disaster. Many fellowships rely on pre-established medical facilities that are present during large events (concerts, marathons, etc.). Pre-established facilities are an invaluable resource for this function. However, the variability in medical supplies, support staff and setup could potentially take away from fellow education. This model establishes a consistent, expandable delivery model which leads to more consistent and improved fellow education. We present a novel use of a mobile medical trailer that is used by the IUSOM EMS fellowship to provide medical care during large events in our area. The mass gathering mobile medical facility is fully supported by Indianapolis Emergency Medical Services and staffed by members of the EMS division including EMS fellows and emergency medicine residents. This trailer is equipped in a standardized fashion to provide extensive medical care including ALS care, basic trauma care, and minor procedures. Additionally, this medical facility is integrated into the medical plans for select large events around the city, including the Indianapolis 500, as a primary casualty collection point in the event of a large disaster. The EMS fellows serve as the primary directors of this medical unit. The fellows, with faculty mentorship and guidance, are responsible for the planning, integration, placement and operations of the medical facility before and during the event. This leadership position both enriches their education in mass gathering medicine, but also offers experiential learning in event planning, incident management, and disaster response. The mobile medical trailer is a unique way of providing mass gathering medical education for EMS fellows. This mobile unit serves as a consistent resource that can be deployed throughout the year giving EMS fellows multiple opportunities to learn and operationalize the principles of mass gathering medicine.

12. Development of a convenient, accessible, electronic system to quantify prehospital EMS fellowship experiences
Emily A Pearce, Chelsea C White, Jenna MB White, Darren A Braude
University of New Mexico
Emergency medical services (EMS) fellowships have been in existence since the 1990s and became accredited by the Accreditation Council for Graduate Medical Education (ACGME) in 2013. The ACGME sets forth competencies for EMS fellows, including the “provision of direct medical oversight on scene, or by radio or phone” (ACGME Program Requirements). In addition, it sets forth competencies for a variety of prehospital procedures and skills. While there are currently 63 accredited EMS fellowships worldwide with 97 positions available annually (NAEMSP), to date there has not been a successfully demonstrated method for documenting and quantifying the prehospital experiences of EMS fellows, either in direct medical oversight or scene responses. The University of New Mexico’s EMS Consortium, which educates up to three EMS fellows annually, developed an online documentation database using REDCap (Research Electronic Data Capture), a secure, web-based application (Harris et al, 2009). An electronic survey was designed and can be accessed by EMS fellows and physicians on smartphones, tablets, or computers, allowing accessibility regardless of time or location. EMS fellows complete the short survey immediately after each direct medical oversight or scene response. Direct interventions in patient care during scene response requires additional documentation, as the REDCap survey is designed to track fellowship activity, not serve as a substitute to patient care reports. A convenient, electronic application for documenting EMS fellowship prehospital experiences allows for regular quality assurance of fellowship activity when EMS fellows are functioning independently in the field. It also ensures that fellowship activities are consistent with ACGME competencies and allows for rapid identification of lower-exposure competencies. Finally, quantification of EMS fellowship activities allows for identification of commonly encountered scenarios, patient presentations, and interventions, enabling EMS fellowship directors to better develop relevant didactic sessions.

13. Developing an EMS Credentialing Exam: Easier Said than Done!
Bjorn K Peterson, Michael Bowen, Tia Radant
Regions Hospital EMS

Local credentialing of EMS providers has received increased attention recently with the publication of the joint NAEMSP/NREMT position statement on credentialing. This is an important component of EMS to ensure appropriate medical oversight and quality assurance. However, there is a lack of guidance regarding best practices. Considering that credentialing decisions could have employment implications, care should be taken to ensure validity of the credentialing process and fairness to all. This process can be very resource-intensive and could present obstacles for smaller systems. Regions EMS partnered with Fisdap to build a valid and reliable cognitive exam. A job task analysis was performed to inform the blueprint. The exam blueprint was populated with test items that are guideline-specific topics as well as general paramedic knowledge. All items were written and reviewed by subject matter experts. The development process required over 200 man-hours and was a serious undertaking. A total of 140 test items were validated, 59 failed review and only 60 made it onto the exam. The exam will be pilot tested with 500 paramedics from 10 EMS agencies receiving medical direction from Regions EMS. A Rasch analysis will then be performed to ensure each item meets a statistical profile. During the process of creating an exam blueprint, drafting items and item review with a group of three experts, it became apparent how labor intensive such an exam is to create. Regions EMS department resources were stretched to provide adequate staff time for this project. Concern for smaller agencies with fewer staff to meet the demands of a validated credentialing exam is significant. Each 2-year credentialing cycle in our system will require an update to the guideline credentialing exam, necessitating at minimum 50 man-hours from the education and clinical staff. This ongoing resource demand could place the validity of our credentialing process at risk. Thoughtful planning for future updates will be critical to the program’s success.
14. Civilian EMS Fellowship Pathway for an Operationally-Active United State Air Force Flight Surgeon
Jesse Mix, Blake George, Konrad Schwinn, Colleen McBratney, Stephen Rush, Robert French, K Moses Mhayamaguru, Amber D Rice, Daniel Beskind, Joshua B Gaither
United States Air Force, 48th Rescue Squadron

Introduction: Some United States Air Force (USAF) flight surgeons serve as Pararescue Medical Directors (PMDs). PMDs are assigned to rescue squadrons and oversee the medical practice, education, training and protocol implementation for the paramedic-trained pararescuemen (PJs). Currently, PMD training includes a 10-day orientation/exposure course to the PMD role. Formal military EMS fellowship training is available but requires the medical officer to leave operational roles for 2 years. Civilian training standards for similar EMS roles include completion of a residency (most commonly emergency medicine, 3-4 years) and fellowship training in EMS (1 year). The purpose of this USAF Operationally-Active EMS Fellowship Program is to provide formal EMS training, improving the operational effectiveness of the PMD, while allowing continued function in the squadron. Here we describe the incorporation of the active-duty PMD into a civilian EMS fellowship. Program Description: This USAF Operationally-Active EMS Fellowship Program is based in Tucson, Arizona through a partnership between the University of Arizona and the 48th Rescue Squadron (48RQS) at Davis-Monthan Air Force Base. The 48RQS PMD fills a civilian, Accreditation Council for Graduate Medical Education (ACGME) approved, EMS fellow position, completing all standard program requirements. To ensure full fellowship participation while allowing continued deployability/training, all components of the EMS administrative and didactic curriculum are webcast to allow distance learning and clinical shifts are grouped to create maximal flexibility. Fellowship elective time focuses on pararescue components. To support the fellow, civilian and USAF Reserve/Air National Guard EMS fellowship faculty provide the fellow mentorship and oversight. Additionally, to maintain clinical skills and credentialing, the PMD continues to see patients in the flight medicine clinic 1d/wk. Conclusion: This innovative partnership between the 48RQS and the University of Arizona allows an active duty flight surgeon to complete an ACGME-approved EMS fellowship while remaining operationally active as PMD. This partnership benefits both the USAF and University of Arizona by advancing recruitment, increasing training opportunities and, ultimately, improving patient care in both civilian and military environments.

15. A State-Wide Military-Civilian EMS Education Partnership
Novneet Sahu, Caitlin Howe, Lisa Hou
Rutgers New Jersey Medical School

The National Academies of Sciences, Engineering and Medicine has urged greater collaboration between civilian trauma centers and the U.S. military. The decrease in combat for military prehospital providers and the need to maintain readiness for trauma care between wars creates an opportunity for military-civilian partnerships in EMS education. Currently, each branch of the active duty military medical force already has a training center incorporated into civilian trauma centers. The current partnerships are Army: Ryder Trauma Center in Miami, Navy: University of Southern California, and Air Force: University of Cincinnati, University of Maryland, and Saint Louis University. Our innovation expands on this to incorporate the National Guard reserve component of the Army and provides a model for expanding these partnerships so that they exist in more places around the country. We created a six-hour training pilot between Rutgers University’s two medical schools, both with Level I trauma centers, and the New Jersey Army National Guard to provide cadaver-based trauma education for combat medics preparing for deployment. The session consisted of case-based procedural training divided into five stations. The stations represented principles of Tactical Combat Casualty Care and included massive hemorrhage,
airway, breathing, circulation, and a final station for anatomy review. The trainees were New Jersey Army National Guard combat medics, and instructors were sourced from EMS fellows, emergency medicine residents, emergency medicine attending physicians, trauma surgeons, and anatomy lab professors. Near future directions include expanding this innovative EMS education partnership between the New Jersey National Guard and Rutgers University through collaboration for didactics, simulation, and clinical care to help meet the goal of building stronger links between civilian and military trauma systems.

16. Collaboration Between EMS Fellowship Programs Enriches Educational Breadth and Resources
Elizabeth Robinson, Bjorn Peterson, Jeff Ho, Nick Simpson, Paul Nystrom, Gregg Jones, Aaron Burnett, Kari Haley
Regions Hospital

The Minnesota Twin Cities metropolitan area hosts two EMS fellowship programs, at Regions Hospital and Hennepin County Medical Center. Both fellowships provide immersive experiences working withprehospital providers, but have unique aspects to their programs. By collaborating between the two programs, we are able to highlight these differences while combining educational resources. This fall, the two EMS fellows spent an afternoon in the HCMC Simulation Center where they encountered two individual high fidelity scenarios meant to take them outside of their comfort zones, followed by four skill stations reinforcing prehospital specific skill sets. Simulations: 1) Fellows are event medicine standby for a marathon in which a runner collapses and is found to be in cardiac arrest. An unruly spectator adds to the stress of the scenario. The fellow must provide ongoing resuscitation with a first-in bag and a first responder while awaiting an ALS ambulance. 2) Fellows are first on scene to a multipatient motor vehicle crash with one deceased/black pediatric patient, two immediate/red and one delayed/yellow adult patients. The fellow must triage patients, provide critical interventions and call for appropriate resources.

Skills:
1) Cricothyrotomy by flashlight
2) Field amputation
3) Intraosseous placement and pediatric intraosseous special considerations
4) Airway management in difficult positions

Both fellows individually completed the simulations and skills stations and during debrief were able to address system-specific issues that may change management. While HCMC is a largely hospital-based urban EMS system, Regions partners with both fire-based urban systems and rural EMS with variably trained providers. By combining resources and perspectives of two fellowship programs, fellows enrich their prehospital education. Future collaboration projects include journal clubs and ballistics research at a local shooting range.

17. A Novel Tool for Training Emergency Medicine Residents in Prehospital Patient Decontamination Procedures
Craig Cooley, Fabiana Ortiz-Figueroa, Kaori Tanaka
University of Texas Health Science Center at San Antonio

Background: Emergency medicine training programs are required to provide “experience in emergency medical services (EMS), emergency preparedness, and disaster management” (IV.A.6.c). For learners, one of the most difficult tasks to master in disaster management training is adequate victim
decontamination, especially when it involves substances that appear absent to the naked eye. Objective: Develop an exercise that combines visible and invisible contamination to train learners in adequate decontamination techniques. Methods: A novel technique was included to our traditional disaster education curriculum, a simulation-based training that includes mass casualty triage, donning and doffing decontamination suit exercises, decontamination procedures, airway management exercises in decontamination suits, and standardized victim decontamination. Standardized victims were layered with a solution containing a fluorescent dye (invisible contamination) and flour (visible contamination). The solution was prepared using yellow highlighter ink and water. Learners were instructed to decontaminate the standardized victims using the decontamination procedures learned. Afterwards, standardized victims were inspected using a black light in a dark room to assess the quality of the decontamination technique. Any highlighter ink solution not appropriately removed would glow under black light. Learners were debriefed after the wet drill and given an opportunity to reflect on the challenges of invisible contamination. Learners repeated the decontamination exercise until adequate decontamination (for both visible and invisible contaminants) was achieved. Results: Initially, the most common areas on standardized victims noted to exhibit residual contamination after the exercise were the axillae, feet, and hands. Standardized victims with abundant hair in their extremities and chest area were also noted to have residual contamination, likely due to poor scrubbing. Learner feedback was positive. Learners felt they had a better understanding of invisible decontamination challenges and the importance of a thorough decontamination. For learners, it was easier to remember the areas to focus on after a visual contamination stimulus. Conclusion: The addition of a novel technique that facilitates the identification of invisible contamination and the ability to evaluate the quality of decontamination techniques provides valuable challenges and realistic exposure in decontamination training.

18. Implementing a Community Volunteer First Responder Program in Arusha, Tanzania
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We report on a novel, low-cost, self-financed, community intervention designed to enable low income communities to use volunteer local resources to provide on-scene first aid and expedited transport in austere environments in developing nations (United Republic of Tanzania) where otherwise there would be none. A diverse well-trained staff consisting of US-based medical professionals and previously trained Tanzanian, experienced first responders were used to train other volunteer community-based first responders in curriculum developed from the Wisconsin Emergency Medical Services Basic Medic curriculum with adaptations made to standard of care based on availability and limitations in human, financial, and manufactured capital. Our intervention to address the apparent need for prehospital care was to: 1) Recruit and train volunteers from the local region who were willing to serve as first responders. This was performed by local community and religious leaders with strong familiarity and local ties to the community; 2) Provide intensive didactic, hands-on, and simulation training to these volunteers in subject matter including basic trauma care, assessing level of consciousness, management of hemorrhage, management of the airway, stabilization of the cervical spine, basic assessment of circulatory, respiratory, and neurologic compromise by accurate attainment and assessment of vital signs, early transport, acute fracture care, burn care, wound care, infectious disease precautions, anaphylaxis, limited toxicology, precipitous delivery and legalities surrounding the delivery of volunteer care in austere environments and documentation of patient encounters; 3) Assist the volunteers in organizing themselves into functioning squads of first responders. Team structure and hierarchies were loosely established based on demonstrated ability and subjective leadership potential; 4) Participants were assessed on knowledge acquisition and retention via written examinations in their native language. Successful students were granted certification through Roger H. Strait Foundation/Friendship
Clinics, NGO. 5) Certified participants from previously trained sessions translated course material and were used to teach at subsequent training sessions of new volunteers. Continued recruitment, education, and data collection to assess the types of emergencies being responded to and interventions being provided is ongoing at this time.