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A Pediatric Emergency Curriculum for Emergency Medicine Residents

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related to EM, and have increased confidence in EKG interpretation for new EM residents.

Abstract:

Introduction: The ability to rapidly and accurately interpret electrocardiograms (EKGs) in the emergency department is an essential skill required by emergency physicians. A near-peer taught EKG curriculum is a viable option for a comfortable and efficient learning environment for new emergency medicine (EM) residents.

Educational Objectives: After participating, learners will have improved recognition of significant EKG patterns related to EM, and have increased confidence in EKG interpretation for new EM residents.

Curricular Design: The curriculum was designed based on Kern's six step approach. While all emergency medicine physicians must be adept at interpreting EKGs, an informal needs assessment specific to Maimonides residency showed consistent discomfort with this skill among graduates. A near-peer approach was chosen to foster an open, communicative, non-threatening environment for learners. There were multiple interactive web-based lectures that covered a wide variety of topics. The target audience was new EM residents and the course was taught by second and third year EM residents. A pre- and post-quiz was administered.

Impact/Effectiveness: Reaction level data showed improvement in comfort with EKG interpretation and self-reported knowledge of EKGs among residents who took the course. The near-peer approach may have allowed for a more comfortable environment for new residents to learn material. The course was easily implemented and will be held again next year.

6 A Novel Wilderness Medicine Curriculum for Emergency Medicine Residents

Elizabeth Hamilton, MD, MPH; Sara W Nelson, MD

Learning Objectives: The objective of this curriculum was to teach emergency medicine residents how to assess, treat and transport patients in an austere environment through an interactive, team based didactic competition.

Abstract:

Introduction: Wilderness medicine is an essential component of Emergency Medicine residency education. Traditionally, wilderness medicine is incorporated into residency training through a combination of classroom based lectures and practical demonstrations. Since its inception in the fall of 2000, medical practitioners have been able to participate in regional Medical Wilderness Adventure Races (MedWAR™) to learn and practice wilderness medicine skills in a competitive setting. While MedWAR competitors have reported gaining valuable experience through participation, this model of team-based, competitive

wilderness medicine simulation has never been applied to residency training. With this in mind, we developed the Wilderness Interactive Didactic Experience, or WildRIDE.

Objective: Our educational objective was for residents to attain comfort with assessing and stabilizing patients in the wilderness through an interactive team-based event modeled after a MedWAR™ competition.

Design: Teams of residents rotated through 6 instructor-led simulations to assess, stabilize and evacuate mock "patients" played by medical students. Instructors scored teams on their completion of critical actions and then debriefed the scenario. Teams also rotated through a circuit of self-directed skills stations to practice activities like improvised splinting, litter carries, shelter building, and wound care. Basic knowledge was assessed with multiple choice questions throughout the event.

Effectiveness: After participating in the WildRIDE event, 100% of residents who completed our post-event survey reported increased comfort with performing a patient assessment in the wilderness. All respondents felt the experience was valuable and that they enjoyed the team-based structure. 92% stated they would like to see the WildRIDE event offered in the future. Participants asked that more instruction be available at the skills station, which we will incorporate into our next WildRIDE.

7 A Pediatric Emergency Curriculum for Emergency Medicine Residents

Taylor McCormick; Genie Roosevelt, MD, MPH; Jennie Buchanan, MD; Maria Moreira, MD

Learning Objectives: To design a simulation-based, half-day boot camp for our senior resident class focusing the most anxiety-provoking pediatric emergencies, resuscitation skills, and uncommon procedures as the final component of a comprehensive pediatric emergency curriculum.

Abstract:

Introduction: All emergency medicine (EM) physicians must be skilled in caring for children as the vast majority of pediatric visits occur in community emergency departments. Exposure to critically-ill children during EM residency is limited, making simulation-based training a key component of pediatric emergency medicine education.

Curricular Design: Based on survey responses from senior residents and recent graduates on knowledge gaps in pediatric emergency care, an advanced pediatric emergency boot camp curriculum was developed and refined by expert pediatric emergency medicine educators. This course is an essential component of a comprehensive pediatric emergency curriculum which includes a basic pediatric resuscitation boot camp intern year, integrated core pediatric emergency didactics, quarterly pediatric emergency morbidity and mortality conference, a Neonatal Resuscitation Program course specifically for third

year EM residents, and a neonatal resuscitation rotation for seniors. A large group session included advanced pediatric EKG interpretation and recognition and management of tachydysrhythmias in children. High fidelity simulation cases included myocarditis, airway foreign body, and ductal-dependent congenital heart disease, with emphasis on resuscitation skills including difficult access, vasopressor and prostaglandin administration, the difficult airway, and needle cricothyrotomy.

Impact: This senior pediatric resuscitation boot camp was the most highly rated educational offering of the academic year, scoring 5 out of 5 points in content, relevance, and presentation by all 12 participants. Comments included: “a must for all residents,” “so helpful, please let’s do more of this,” “fantastic,” “thank you,” “amazing sim session.” All EM residencies should develop a similar pediatric emergency curriculum to ensure graduating residents are confident and competent to care for low-frequency, high-stakes, and high-anxiety pediatric emergencies.

8 A Redlining Primer: Structural Determinants of Health in Resident Orientation

Megan Healy, MD; Margaret Wolf, MD

Learning Objectives: Introduce incoming residents to the history of discriminatory housing and lending policies which directly contribute to current day health disparities in our highly segregated city.

Abstract:

Introduction/Background: It is essential for physicians to understand systemic racism in order to combat healthcare inequities. Many trainees have little exposure to historical issues like redlining that impact the health of the communities they serve. There is little guidance for which modalities are effective for teaching structural determinants of health. We created a redlining primer to introduce residents to discriminatory housing/lending policies which directly contribute to current day health disparities in our highly segregated city.

Educational Objectives:

- Introduce incoming trainees to the history of discriminatory housing/lending policies.
- Highlight the stark health disparities that are rooted in redlining, such as gun violence, lead levels, access to primary care and life expectancy.

Curricular Design: We created a session to introduce incoming house staff to discriminatory housing/lending policies and their impact on patients. The session included a lecture, followed by an interactive panel discussion with faculty experts in health equity research. The primer described the historical context of housing/lending policies in our city. We traced these practices to the resultant high levels of segregation and resultant disparities across important health markers that map along these divisions, including gun violence, lead levels, access to primary care and life expectancy.

Impact/Effectiveness: Sessions were held for all resident as part of their GME orientation, for a total of 206 participants. 42% of survey respondents reported they were unfamiliar with the concept of redlining prior to the session. 62% reported no prior dedicated teaching on this subject. The majority (96%) reported the topic was important/v. important to their clinical practice. 77% reported they were likely/v. likely to read more about this topic. 88% reported they would like to see structural topics like this covered more in their training.

9 Application of 3D Printed Anatomic Heart Models in Instruction of First-Time Learners of Bedside Echocardiography

Michael Vu, MD; Richard Gordon, MD

Learning Objectives:

- Improve first-time learners’ understanding of echocardiographic anatomy
- Improve learners’ echocardiographic image quality
- Reduce learners’ time-to-acquisition of interpretable echocardiographic images

Abstract:

Introduction/Background: The ubiquity and utility of bedside transthoracic echocardiography (TTE) creates the need for a strong foundation in the anatomy. Since ultrasound is increasingly being integrated into undergraduate and graduate medical education, the opportunity to build a solid base in this area is critical.

3D printed anatomic heart models can help learners bridge the gap between 2D and 3D space with their ease of manipulation and open-source accessibility. This can potentially improve patient outcomes by enabling operators to make better-informed clinical decisions quickly at the bedside.

Educational Objectives:

- 1) Provide learners high-fidelity 3D cardiac models cut in cross sections representing each of the TTE views (parasternal long and short axis, apical four chamber, subxiphoid)
- 2) Improve learners’ understanding of echocardiographic anatomy

Design: We obtained digital heart models from the NIH 3D print exchange (<https://3dprint.nih.gov/>) and cut them in cross sections for each of the TTE windows using modeling software. These files were then converted to physical models using a 3D printer.

Students participated in lectures followed by a hands-on scanning session using live volunteers where they practiced acquiring images. For each window, the appropriate 3D model was used to correlate the position of the patient’s heart to the probe and to illustrate how the beam cuts the heart in cross-section.

Impact: The models were positively received. Students agreed that factors such as screen and probe indicator position