

Abstract:

The pediatric emergency medicine (PEM) environment is well suited for simulation-based activities, be they educational interventions for PEM learners, evaluations of the interface between health providers and the environment that they work in, or research investigations using simulation as a tool to answer specific clinical questions. As such, PEM has been among the leaders in the integration of this modality for clinical training. Traditionally, simulation has been used extensively for the dissemination of clinical training in the areas of clinical knowledge and its application, and the clinical, technical, and teamwork skills involved in PEM care. Increasingly, simulation is being used in novel applications, including breaking bad news, disclosure of error, family-centered care, quality and patient safety education, and system-level integration. The future will look to further identify, measure, and inform the integration of simulation with new and innovative adjuncts in the clinical environment, as well as to determine the optimal timing and use of simulation-based education to enhance the quality of care delivered to patients by the interprofessional and multidisciplinary team.

Keywords:

pediatric emergency medicine; pediatrics; emergency medicine; simulation; cardiopulmonary resuscitation; trauma; multiple casualty incidents; disaster management; transport medicine; longitudinal curricula; boot camps; in situ simulation; just-in-time training; breaking bad news; family-centered care; disclosing medical error; patient

The Past, Present, and Future of Simulation-based Education for Pediatric Emergency Medicine

Vincent J. Grant, MD, FRCPC*,
Meg Wolff, MD†, Mark Adler, MD‡

The pediatric emergency medicine (PEM) environment is complex and dynamic. As the “front door” to the hospital for a significant number of patients, the sheer variety of possible clinical presentations that present in an unexpected manner is truly daunting. From an acute care standpoint, these presentations vary from the common (eg, asthma, seizures), to the rare (eg, penetrating thoracoabdominal trauma, organophosphate poisoning), to the novel and unexpected (eg, newly emerging infectious disease such as Middle East Respiratory Syndrome or Ebola), with uncommon or unusual presentations of everything in between. Further layered on that clinical complexity is a broad range of care providers that must function as a coordinated team. These team members range from various students, to the unit aides/clerks, residents, nurses, nurse practitioners, physician assistants, paramedics, respiratory therapists, and attending physicians whom together make up the backbone of the PEM environment. Further layered on

safety; outreach education; mobile education; systems integration

*Department of Pediatrics, Cumming School of Medicine, University of Calgary, KidSIM Pediatric Simulation Program, Alberta Children's Hospital, Calgary, AB, Canada; †Center for Experiential Learning and Assessment, University of Michigan Medical School, Ann Arbor, MI; ‡Educational Research and Innovation (ERI), Northwestern University Feinberg School of Medicine, kidSTAR Medical Education Program, Division of Emergency Medicine, Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL.

Reprint requests and correspondence: Vincent J. Grant, MD, FRCPC, Department of Pediatrics, Alberta Children's Hospital, 2888 Shaganappi Trail NW, Calgary, AB, Canada T3B 6A8.

(E-mail: vjgrant@ucalgary.ca, vincent.grant@ahs.ca (V.J. Grant))

1522-8401

© 2016 Elsevier Inc. All rights reserved.

the clinical and personnel complexity is the complex system of integration with other clinical areas within each institution, the “system” that orbits around the PEM environment (eg, critical care, diagnostic imaging, operating room). And finally, this system relies on the interplay of communication between team members, between the team and the “system” and between the team and the patients and families that we serve. Whether this communication is the handover of a patient or breaking bad news to a family, each situation is dynamic, uncertain, and potentially loaded with safety issues at each step. It is in all of these diverse ways that the experiential learning model at the foundation of simulation-based education (SBE) matches the PEM environment and thus has led to the relatively quick uptake over the past 2 decades. This article will tackle 3 essential elements of the relationship between simulation and PEM. First is a review of “where we have been,” including the breadth of curriculum and integration that has been created and disseminated from the inception of simulation in the PEM environment to the present. Next is a review of “where we are now,” in particular highlighting areas where PEM simulation is being creative, innovative, and setting a new bar for those who deliver SBE in any area. The final component is a compelling review of “where we are going,” a provocative view of where simulation may be further expanding new boundaries in the delivery of PEM-based SBE and clinical care.

WHERE WE HAVE BEEN

Content

There is a long history of curricula developed for PEM providers that encompass the various elements that influence patient care in the clinical environment.¹⁻³ These include communication, clinical assessment, and procedural and nontechnical (teamwork) skills, among others. These topics are explored in greater detail throughout this edition of *Clinical Pediatric Emergency Medicine*. These curricula also include many subdomains of PEM, including cardiopulmonary resuscitation, trauma, multiple casualty incidents (MCIs), disaster management, and transport medicine.

Cardiopulmonary Resuscitation

Life-threatening events and cardiopulmonary arrests in pediatrics are rare. Therefore, the knowledge, clinical, procedural, and team skills necessary to efficiently and effectively run a pediatric resuscitation are not frequently practiced, making simulation the ideal environment to further hone these skills in order to be prepared for the real event.⁴⁻⁶ The American Heart Association has

advocated for the increased use of simulation as part of advanced life support training, including Pediatric Advanced Life Support (PALS). The addition of simulation to advanced life support curriculum has been shown to increase knowledge and skills in providers relative to those who did not receive simulation as part of their training.^{7,8} Furthermore, high-fidelity resuscitation training has been shown to improve acquisition of clinical skills in comparison to training with low-fidelity manikins, thus supporting the American Heart Association's integration of simulation into these curriculum.⁹ A longitudinally distributed PALS course with a significant simulation component has also been developed to address the issue of knowledge decay seen in students following PALS courses.^{10,11}

Trauma

Pediatric trauma care was one of the earliest areas of focus within PEM regarding simulation-based training.¹²⁻¹⁴ Because these patients are some of the more complex within the PEM environment, from both a clinical and team dynamics standpoint, simulation training is a natural fit for pediatric trauma and has been shown to improve the quality

Download English Version:

<https://daneshyari.com/en/article/3235705>

Download Persian Version:

<https://daneshyari.com/article/3235705>

[Daneshyari.com](https://daneshyari.com)