

Simulation Drives Innovation in Teaching, Learning, and Clinical Practice

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A patient is wheeled into the ED in acute respiratory distress. The paramedic gives report to the primary nurse.

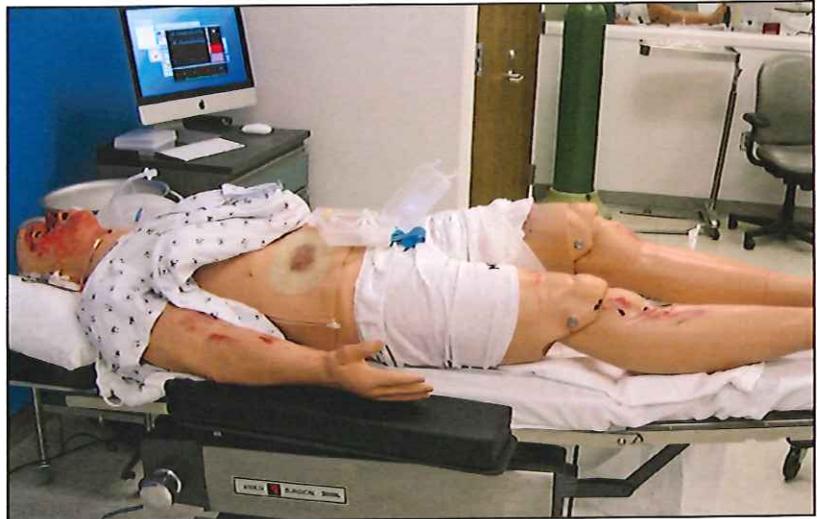
“Mr. Wheeler is a 43-year-old man who has been having progressive swelling of his face and tongue for the past 24 hours, and now he can barely breathe. He’s on Digoxin, Coumadin, and some ACE inhibitor for his blood pressure. He has no known allergies as far as we can tell.

“His vital signs are a pulse rate of 114 a minute, a respiratory rate of 24 with stridor, a blood pressure of 168/110, and an O₂ sat of 91% on room air. We put him on nasal oxygen at 2 L/minute, and tried to start an IV but were unsuccessful.”

Mrs. Wheeler interrupts the report continuously, petting her husband’s hand and demanding to see the doctor. Mr. Wheeler, with a rather prominent tongue protruding between his lips, says little, conserving his breathing and minimizing his stridorous labors. The nurse assesses the patient, calms the wife, begins hooking up Mr. Wheeler to the monitor and calls out for the physician.

The team of emergency physicians soon arrives and takes report, evaluates the patient, and begins strategic and tactical steps that will resolve the immediate crisis — or so they hope.

Nothing very unusual about this scenario, is there? It happens every day in practically every ED. Yet, it is different. The nurse and physicians are students at the College of Nursing and the



College of Medicine at the University of Toledo, and the medic and his wife are faculty. Mr. Wheeler? He’s a \$100,000 simulator, a permanent resident of the university’s Interprofessional Immersive Simulation Center. (www.utoledo.edu/centers/iisc/index.html.) The program under the direction of Pam Boyers, PhD, and the management of Ben Stobbe, MBA, aims to create a new paradigm of education for health care students and professionals.

The university’s emergency medicine residency faculty was asked to supplement the students’ experience with a unique docent program where students would enhance their history-taking, physical examination, and critical decision-making skills via original patient scenarios and case presentations. The number of students rotating through the ED had grown

so large that it was no longer feasible to provide the activity there; it was time to integrate more sophisticated education via the simulation center.

The students’ experience grew richer as they practiced basic airway management, splinting, intraosseous infusion, suturing, needle decompression, and spine immobilization using the anatomical models and the simulators. The PA and medical students were then taken to a simulator to work through a clinical presentation in tandem with these labs. While these simulators came with



prepackaged case presentations that were programmed into the computer system, the faculty created its own scenarios more geared to the nuances of emergency medicine and the myriad factors that can complicate any patient encounter.

This experience was greeted positively by the students, but it wasn't until faculty from the College of Nursing expressed a desire for their students to participate that the faculty exploited an opportunity to present a truly interdisciplinary workshop that would approximate what happens in the real clinical world, especially in the ED. Medics, nurses, PAs, and physicians with their complementary skill sets work together weekly to expose students to the real world of providing acute care to an emergency patient.

Scenarios were developed to fulfill the ACGME criteria and place emphasis on interprofessional communication, acute patient care, management priorities, staff safety issues, and procedures. This was completely consistent with one of the Interprofessional Immersive Simulation Center's mission statements: "Stimulate innovation in teaching, learning, and clinical practice to advance interprofessional health care education."

Each 2.5- to 3-hour session typically has five to eight students from the different disciplines. EMTs under Brian Cress and Jeff Schneiderman, nursing under Marti Sexton, physicians under us, and PAs under Sharon Gentry also educated the students from their own perspectives. The sessions are meant to educate, not evaluate, because the students come from diverse levels of education and clinical experience. While it's gratifying to see students practicing basic and advanced airway, intraosseous infusion, and needle decompression skills

under a multidisciplinary tutelage, it is even more rewarding to witness the students working with and learning from each other. This type of experience does not typically occur at their stage of education.

Emergency medicine residents also have been incorporated into this educational novelty. Scenarios have been created where the resident assumes the mantle of an attending physician overseeing the activities of the "staff" during the resuscitation of a critical patient. One recent scenario had a PGY-III resident on his disaster medicine rotation work with another resident and a student nurse to manage the care of three bombing victims.

New initiatives are being developed as this method of education receives increasing recognition, acceptance, and support among faculty and students. The literature supports having pharmacists physically present in the ED to improve patient care and provide critical and timely input to the emergency physician so pharmacy students and residents also should be included in scenarios that highlight their expertise and emphasize their clinical contributions in an emergency. Public health graduate students also will soon be exposed to the clinical aspects of a foodborne disease outbreak when they are incorporated into an interdisciplinary scenario involving multiple *E. coli* patients presenting to an ED.

Simulation training is a concept that is having greater and greater acceptance in the halls of higher learning. No commonly accepted definition of the term exists, and that allows the educator in emergency medicine greater flexibility in exploring how it can be best adapted to enhance the education of the next generation of health care providers. 



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