

Using Simulation to Improve Systems



James A. Kearney, MD^a, Ellen S. Deutsch, MD, MS^{b,c,d,*}

KEYWORDS

• Simulation • Systems • Safety • In situ • Otolaryngology • Quality

KEY POINTS

- Components of the systems that otolaryngologists work within affect their ability to deliver the best care for their patients.
- In situ simulation, particularly when real teams participate in simulations in real patient care areas, can be used to improve the systems that otolaryngologists work within.
- There are many opportunities and techniques that can be used to implement in situ simulation.

As the otolaryngologist on call, you are paged to the emergency department (ED) because of a patient in respiratory distress. You arrive promptly, and find a 56-year-old white male with massive facial edema. He has a history of diabetes and hypertension, and takes insulin and an angiotensin-converting enzyme inhibitor. He has no known drug allergies. The ED physicians have administered epinephrine with no significant improvement. Two attempts at intubation have been unsuccessful. You recognize that he has medication-related angioedema. The patient is struggling to breathe and his oxygen saturation is 92%.

Planning to perform cricothyrotomy, you request a scalpel. The nurse hands you an unusual scalpel; it is a safety scalpel (**Fig. 1**). You palpate the patient's neck to find surgical landmarks, and prepare to make an incision, but the blade is covered by a safety sheath and you fumble to try to retract the sheath. The patient's oxygen saturation is now 87%. You eventually get the blade exposed, nearly cutting yourself in the process, and make your incision. You enter the airway - success! You ask for a Yankauer suction and one arrives in your hand, but it does not seem to work, although you can

Conflicts of interest: None.

^a Pennsylvania Hospital, University of Pennsylvania Health System, Perelman School of Medicine at the University of Pennsylvania, 800 Walnut Street, 18th Floor, Philadelphia, PA 19107, USA; ^b Department of Anesthesiology and Critical Care Medicine, Children's Hospital of Philadelphia, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, USA; ^c Pennsylvania Patient Safety Authority, Harrisburg, PA, USA; ^d ECRI Institute, 5200 Butler Pike, Plymouth Meeting, PA 19462, USA

* Corresponding author. ECRI Institute, 5200 Butler Pike, Plymouth Meeting, PA 19462.

E-mail address: edeutsch@ecri.org

Otolaryngol Clin N Am 50 (2017) 1015–1028

<http://dx.doi.org/10.1016/j.otc.2017.05.011>

0030-6665/17/© 2017 Elsevier Inc. All rights reserved.

oto.theclinics.com



Fig. 1. Close-up of safety sheath on disposable scalpel.

hear the sound of the suction. What is the problem? Troubleshooting reveals that the suction canister is cracked. The respiratory therapist grabs the suction canister from the next bay and replaces the cracked one. Although this is accomplished fairly quickly, it has been a distraction, and you can hear the pitch of the pulse oximeter getting lower, as the patient's oxygen saturation continues to decrease. Nevertheless, you insert a tracheotomy tube and, with practiced fluency, you pull out the obturator, insert the inner cannula, and attach a CO₂ detector, which confirms correct placement of the tracheostomy tube. The respiratory therapist promptly connects supplemental oxygen, the patient appears to be more comfortable, and his oxygen saturation improves.

Because this issue is focused on simulation, it may not be surprising to learn that the same patient may appear in the ED again and again, and is a high-technology manikin. Many of the articles in this issue address ways in which simulation can be used to enhance the capabilities of individuals and of teams. However, the story that unfolds during this simulation provides examples of how the environment in which health care is delivered also affects clinicians' ability to provide safe, effective, and timely care.

This angioedema simulation may have been designed to enhance the teamwork skills of the participants, and identifying the equipment problems was serendipitous, or this simulation may have been an intentional system probe, conducted in situ (eg, in a real ED) to identify problems before real patients might be affected. In either event, in addition to providing an opportunity for the participants to reflect on the medical management of the simulated patient, the debriefing after the simulation provides an opportunity to acknowledge and begin to mitigate the equipment problems.

HOW DO SYSTEM COMPONENTS AFFECT CLINICIANS' ABILITY TO CARE FOR THEIR PATIENTS?

Attempts to understand and improve health care delivery often focus on the characteristics of the patient and the characteristics of the health care providers, but larger systems surround and integrate with patients and providers; components of these systems can support or interfere with efforts to provide optimal health care. Health care delivery is a sociotechnical system in which multiple agents and system components affect, and are affected by, other agents and other system components.^{1,2} In the case of the patient with angioedema described in the beginning of this article, the otolaryngologist had the knowledge and skills to control the patient's airway, but had to use an unfamiliar scalpel.

Download English Version:

<https://daneshyari.com/en/article/5715522>

Download Persian Version:

<https://daneshyari.com/article/5715522>

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