The Role of Simulation in Promoting Multidisciplinary Teamwork

The Institute of Medicine, in its publication, *To Err is Human*, issued a number of recommendations to enhance patient safety. Included in this report was a recommendation to train in teams those who are expected to work in teams.¹

The contribution of human errors in communication and teamwork to adverse events and outcomes is well known in the aviation industry, as well as in medical critical events.²

Retrospective analyses of adverse events and critical incidents have identified deficiencies in teamwork and communication as among the factors contributing the most to such misadventures. Simulation is the keystone of training in organizations requiring high reliability, such as aviation, nuclear power and the military. High-fidelity human patient simulation has been advocated as an effective way to train health professionals. While anesthesiology was an early adopter of simulation-based training in crisis management, many other specialties have followed, including multidisciplinary areas such as critical care, emergency medicine and surgery.

Teamwork is of particular importance in the critical care arenas as a way to optimize patient outcomes in clinical crises, including emergency airway or cardiac events. Complication rates during emergency tracheal intubation are as high as 78%. Life-threatening cardiac arrhythmias require a swift response using established guidelines to optimize patient outcomes. In both situations, sound knowledge and skills are essential, but translating this into coordinated team activity is a challenge. Few healthcare workers receive training in teamwork. In addition, even though they work together, the different clinical disciplines have traditionally trained separately.³

The benefit of simulation training for technical skills (such as theoretical knowledge, procedural skills and technical performance during resuscitation events) as well as nontechnical skills (like teamwork, leadership and communication) has been well established in both adult and pediatric critical care arenas. High-fidelity simulation with well-staged and realistic scenarios followed by structured debriefing sessions appears to be the most promising educational tool for healthcare team members.

Simulation-based training among multidisciplinary teams offers several benefits beyond those of nonpracticed methods. First, simulations provide an engaging, high-fidelity learning environment that emulates the tasks and equipment encountered in the work environment. Such training environments provide an opportunity for practicing dynamic teamwork skills among team members from different disciplines. Second, such methods serve as a safe environment for learning without the risk of patient harm. When errors do occur, simulations allow for immediate feedback to maximize learning. Third, the adaptability of medical simulation allows the learning experience to be tailored to meet systemic training objectives.⁴

Although the concepts of teamwork training are relatively straightforward and the need for it obvious in training multidisciplinary teams, the implementation of a comprehensive teamwork program can be a complex and a lengthy intervention. The goal of such a program is to affect a true change in culture. There are several options available to institutions to teach teamwork training. One of the most well-known and studied is the TeamSTEPPS curriculum, which was created by the Department of Defense and the Agency for Healthcare Research and Quality. This is an evidenced-based curriculum that is available at no charge to organizations that wish to implement it. Information can be found at http://teamstepps.ahrq.gov. Other simulation-based programs that may be utilized for multidisciplinary medical team training include Anesthesia Crisis Resource Management (http://med.stanford.edu/VAsimulator/acrm/) and Team Oriented Medical Simulation.⁵

Challenges to multidisciplinary team training include, but are not limited to, the inherent difficulties of multidisciplinary teams with high clinical workloads finding time to practice crisis management and teamwork skills, as well as logistic issues and the restricted work hours of team members. Several publications have described the development of a hospital-based, in situ simulation suite and regularly scheduled educational opportunities for team members from multiple disciplines to practice and train in crisis resource management. Recent studies have also shown an improvement in trainee confidence and decreased anxiety regarding participating in future critical events after simulation-based education. Some studies also compared self-reported confidence and observed clinical performance and found a reasonable analogy of self-to-expert assessments.⁶

One of the issues with team training initiatives has been the paucity of robust measurement tools to demonstrate improvement in performance. The ability of the measurement tools to discriminate among the different components of teamwork has been limited. A 2011 publication by Frengley et al used the Teamwork Behavioral...
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References and disclosures are available at www.sccm.org/criticalconnections.

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