Improving Team Performance Through Simulation-Based Learning

Mark S. Volk, MD, DMD

KEYWORDS

• Medical errors • Teamwork • Simulation based • Medical culture • SimZones

KEY POINTS

- An unacceptably large number of medical errors occur each year in US hospitals secondary to failure of adequate teamwork and communication.
- Development of good teamwork is impeded by the organizational, educational and cultural aspects of medicine. Unlike other high stakes industries, medicine seldom teaches or practices teamwork.
- Simulation-based team training is a means for health care practitioners to learn and practice teamwork principles such as crisis resource management.

Since construction of the first medical simulator in 1988 by Gaba and DeAnda,[1] simulation has become an increasingly valuable tool. Medical simulation now has diverse applications and is being used to train, prepare, and evaluate health care professionals as well as design policies and facilities for health care organizations. Perhaps the area in which it has the most potential impact is in improving teamwork among health care providers.

This article examines (1) the health care safety problem, (2) the barriers to teamwork in medicine, (3) improving health care teams using simulation-based team training, (4) developing a simulation-based teamwork training course, (5) the efficacy of simulation-based learning, (6) the future role of simulation-based teamwork learning in otolaryngology.

In discussing simulation-based learning and team performance the role of health care teams and how their function affects patient care must first be considered. For many years the health care industry has considered itself to be team oriented. Whether in the operating room (OR), the emergency room, or on patient floors, caregivers view themselves as part of a health care team. However, over the past 20 years the performance of these teams has been called into question.

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Department of Otolaryngology and Communications Disorders, Boston Children's Hospital, 300 Longwood Avenue, Boston, MA 02115, USA
E-mail address: mark.volk@childrens.harvard.edu

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THE SAFETY PROBLEM

There are currently significant safety problems within health care. These problems became widely evident with the publication of the Institute of Medicine (IOM) report in 1999.[2] The report stated that, because of medical errors, between 44,000 and 98,000 people each year die while inpatients in US hospitals. Subsequently, in 2000, Starfield[3] estimated that the number of deaths may be as high as 250,000 per year. In 2013, James[4] studied the same problem and found that the number is as high as 400,000 deaths per year. To put this into perspective, 400,000 deaths is the equivalent of four fully loaded commercial 747 airliner crashing every day for a year.[3,4] If this number of accidents were occurring in the airline industry it would have a profound effect on our society. Our faith in the safety of commercial flying would be shattered. Panic would ensue. Domestic and international travel and trade would come to an abrupt halt. These are the consequences of such a series of hypothetical disasters occurring in the airline industry.

However, a crisis of this magnitude is happening in health care. Despite being as deadly as the hypothetical airline catastrophe, the health care issues outlined earlier have a minimal impact on the public's perception of health care safety. In the airline industry every tragedy is in the news and publicly scrutinized and investigated, but in health care no such public scrutiny occurs. The health care safety problem is therefore under appreciated, even by health care providers.

As surgeons, otolaryngologists need to be particularly concerned regarding this epidemic because 66% of medical errors occur in the OR.[5] Of these errors, 54% are preventable.[6]

CAUSES OF HEALTH CARE ERROR

The causes of many health care errors are nontechnical. These are errors that occur not because of a lack of medical knowledge, preparedness, or technical ability; they occur because of a communication or teamwork breakdown. That is, the expertise to manage a crisis or clinical problem is usually at hand, but it is the ability of the health care team to organize, diagnose, plan treatment, and execute the treatment strategy that is often the stumbling block leading to most errors. Poor team performance accounts for the single most common cause of morbidity and mortality in health care. Several Joint Commission studies have shown that more than 60% to 70% of medical errors are secondary to teamwork and communication failures among clinicians.[7] In researching the cause of adverse events involving trainees, Singh and colleagues[8] showed that inadequate teamwork was responsible for 70% of 240 malpractice cases comprising mostly surgical residents. Poor team performance results in inefficiencies and poor patient outcomes, as well as tension and distress among staff.[9] Poor teamwork is the common denominator to most of the medical errors currently occurring. Despite this being known for some time, it appears that medical errors continue to occur at the same, or perhaps increasing, rates as in the past.[4,10,11]

BARRIERS TO TEAMWORK IN MEDICINE

Individuals inevitably make errors. The advantage of a high-performing team is that it identifies, resolves, and learns from the errors that are made by its individual members. Many of the barriers to good teamwork and communication in health care can be attributed to organizational, educational and cultural factors. Each of these elements has a synergistic effect in inhibiting good teamwork and communication.