

Effective trauma teams: Trauma team simulations

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Introduction

Resuscitation and management of patients with major traumatic injuries can be challenging and stressful for trauma teams. Shapiro et al. (2004) have reported that effective team training can affect performance improvement in clinical situations. Education and training often focus on skill attainment, but not on team building and dynamics. Effective teams that communicate well can improve the outcomes for patients and play a role in avoiding errors (Shapiro et al., 2004). A planned approach with all trauma team staff members understanding their respective roles is considered a patient safety-orientated approach to care. Harkins (2009) describes trauma as a “team sport”. This team sport concept was the underlying focus for our trauma simulation day with an emphasis on communication.

Background

Trauma simulations are a monthly routine at our trauma facility. Simulation exercises (both adult and pediatric) permit teams to practise trauma scenarios in the environment in which they work and become familiar with trauma resuscitation routines. Simulations allow trauma teams to participate and interact together and practise their roles in a safe learning environment in real time simulation. Table 1 describes the members of our trauma team.

Table 1. Trauma Team Members
Trauma Team Leader — physician (Debrief Lead)
Trauma Team Leader — ED resident
Senior and Junior Surgery Residents
Neurosurgery Resident
Orthopedic Resident
Anesthesia Resident
RN Recorder
RN Procedure
RN Assessment
Respiratory Therapist
LPN-orthopedic Technician
Radiology Technicians
Pastoral Care (family support)
Social Work (family support)
Other services as required

The trauma simulations are designed in two phases: the simulation and the debriefing. Critical to the process of team simulation exercises is the debriefing following the event. This is an opportunity for team members to discuss how they feel the simulation progressed, their role in the simulation, and points for improvement.

Taking simulation to a new level: From simulation scenario to simulation day

The trauma program routinely organizes an orientation for all new surgery residents in July of each year. An opportunity existed to combine the concepts of simulations and orientation together for a mass of new surgery residents in one day. Planning began to host a simulation trauma day with the new surgery residents, trauma team leaders, emergency department staff, and simulation staff. Since simulation exercises are ideal in the environment that teams are expected to perform in, the emergency department hosted the real time event. A separate room was set up for viewing the real time streaming video and for debriefing the teams.

Organization/agenda

A multidisciplinary team of physicians, nurses, radiology, respiratory services, and simulation personnel met together to plan the event several months in advance.

The simulation education day was organized into six different simulations that were divided into three morning and three afternoon sessions. The day ended with a Grand Trauma Rounds by an engaging a dynamic presenter on Crisis Management and its Role in Trauma. This presentation discussed the importance of crisis management principles in the safe and efficient care of unstable patients, the basics of patient safety as they apply to trauma and practical strategies in teamwork, communication, and leadership.

The simulation day was advertised to trauma team leaders, surgeons, intensivists, nursing staff of the emergency department, the surgical trauma unit, the neurosurgical trauma unit, and the general systems and neurological intensive care units. Volunteers were enlisted from all of these areas. The volunteers were able to watch the streaming live video and observe how the trauma team functioned in action or participated in real time simulation as an active trauma team member. More than 100 personnel participated throughout the one-day event. See Table 2 for learning objectives.

Table 2. Objectives for the Trauma Simulation
<ul style="list-style-type: none">• To educate and promote characteristics that will enhance the acute management of trauma patients.• Teaching members of the multidisciplinary trauma team skills to not only effectively manage the patient, but also the acute crisis at hand (crew/crisis resource management).• Emphasizing: communication to improve teamwork and crisis management, how to effectively communicate, how to improve understanding, and how to enhance completion of tasks.

A goal of the trauma day was to allow as many new residents as possible to participate in the event. Teams of eight residents were divided into two groups per session. While one group enacted the trauma case, the other group watched from another

room via video. The simulation centre staff were key to setting up the simulation area and equipment for streaming the video. Once the acting group completed the trauma case, they joined the watching group for a debriefing on what worked well, what did not, and on the importance of team communication. The debriefing was led by experienced and dedicated trauma team leaders and provided an opportunity for resident and participant questions and learning. The group that watched the video first went to act out the same trauma simulation while the first group watched the live video. The second group had the advantage of viewing the video and participating in the debriefing prior to their simulation. Lessons learned during the initial debriefing were put into practice in the repeat scenario.

For the six simulations, four trauma cases were utilized for learning. The cases were a mix of adult and pediatric scenarios.

Scenario one

A flail chest/respiratory distress case. The teaching points were focused on the primary survey, tension pneumothorax as a clinical diagnosis, and the early need for airway management especially for major thoracic injuries.

Scenario two

A traumatic brain injury case. The teaching points were the recognition and management of traumatic brain injury and the avoidance of secondary brain insults. Other emphasis for teaching and learning included the importance of assessing and managing concomitant spinal injuries and the potential for missed injuries.

Scenario three

A penetrating trauma/massive transfusion case. The teaching points were establishing early and adequate IV access, the triad of death—acidosis, hypothermia, coagulopathy, and the need for resuscitation, rewarming and early transfusion.

Scenario four

A severe injury to the extremity case. The teaching points were control of hemorrhage using direct pressure with or without a tourniquet, the establishment of early and adequate IV access, assessing for all injuries, consider the mechanism of injury, and avoid being distracted from the obvious visible injury.

Teaching material, including posters in the simulation area outlining trauma team members, their duties, and responsibilities as a member of a team, were handed out. Signage was visible in the emergency department that alerted all staff and visitors that a simulation was in progress.

Crisis resource management


Following the simulation exercises, all staff were invited to trauma grand rounds. The topic was presented by an intensive care physician on crisis resource management. The focus of grand rounds was to reflect on communication during crisis management and day-to-day practice. The presenter focused on the importance of communication for improving teamwork and outcomes for patients (Brindley et al., 2011).

Evaluation

All participants had an opportunity to complete an evaluation that had a rating scale, as well as a chance to add other comments.

Overall, participants rated the experience as positive and a fun way to learn. They felt the day was well organized and met their learning objectives. Highlights included that the debriefing techniques and video feedback enhanced learning, and simulation days should be planned more often. The participants felt all staff and facilitators were non judgmental, which made the experience a safe learning environment. Most participants felt that this learning opportunity had made them feel that they would be more comfortable dealing with a true trauma situation. Areas for improvement and consideration for the next planned simulation day include a demonstration of the equipment and mannequin at the beginning of the day, more time for each scenario, a larger room for the debriefing, and for surgery residents to act out roles they normally would be expected to play (a plastic surgery resident acting in this capacity). The surgery residents stated they would have been better prepared if they had taken Advanced Trauma Life Support (ATLS) prior to participating. All participants stated they would participate in future simulation exercises.

Conclusion

The trauma simulation day committee felt the goals for the event were achieved. The staff who took part highly valued the experience and felt the simulation exercises should continue. 

About the authors



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