

Midwest Surgical Association: Presidential Address

Team spirit

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It has been an honor to be able to work for this association, with the team of officers, with Marsha Langstraat, the prior Clearinghouse Director, our current meeting planners at LPet, and so on. I value this association immensely. I treasure the family-friendly atmosphere, and I knew from my first meeting when I was a 2nd-year resident that this was going to be a yearly tradition no matter where I was or what was going on in my life. I enjoy the scientific sessions, case presentations, opportunities for residents, and the lifelong friendships that have developed from the meetings. I really am awestruck that I am giving an address to an association membership that I cherish so much and that has had so many great talented presidents who provided thoughtful and inspiring addresses. I hope that in this address I can pay due tribute to the association by blending in the contributions from some of the Midwest Surgery members who have inspired the components of leadership and team spirit.

The team topic was introduced by Don Moorman's address in 2004 when he discussed the medical team training initiative at Beth Israel Deaconess in Boston, MA.¹ The concept we heard at that time was not new to areas outside of medicine. Industry, military, aviation, air traffic control,

and nuclear power plants all have developed team training initiatives that included crew resource management, leadership, situational awareness, and communication. These initiatives allowed medical teams to adapt components and concepts to multiple unique medical specialty areas. The Beth Israel Deaconess Medical Center, Harvard Medical School adapted and applied the concepts of crew resource management principles when training 220 staff members in the field of obstetrics. The program resulted in a 25.4% reduction in the Adverse Outcomes Index, a 13.4% reduction in the severity of adverse events, and improved overall safety and quality.²

Medical team training programs have grown, expanded, and been promulgated as TeamSTEPPS by the Department of Defense in collaboration with the Agency for Healthcare Research and Quality and the American Institutes for Research. The National Implementation of the TeamSTEPPS Project has established team training resource centers around the country that conduct master trainer training courses in this concept. Team performance is depicted with a 2-way dynamic interplay between 4 skills (ie, leadership, situation monitoring, mutual support, and communication) and the 3 team-related outcomes (ie, knowledge, attitudes, and performance). Interaction between the outcomes and skills is the basis of a team striving to deliver timely, safe, and quality care. I have taken the liberty to use the 4 skills of the TeamSTEPPS for organization of this address.

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On a recent trip to Antarctica, I was fascinated by a historical lecture about a person who some have called “the greatest leader that ever came on God’s earth, bar none,” Sir Edward Shackleton. The attempt at a trans-Antarctic expedition and the plight of the crew of the *Endurance* stimulated me to read more about this amazing survival story, its leader, and his skills. In brief, Shackleton and his men survived a 2-year plight in the Antarctic after the entrapment and wreck of their ship, the *Endurance*. They endured severe weather, hardships, boredom, and struggled for food. However, they and their leader remained determined in their pursuit for survival and rescue. Shackleton and 5 of his men eventually were able to sail a modified lifeboat to an island 800 miles from the stranded crew’s location to safety. Shackleton then began his mission to return with more sturdy vessels to save the crew. He made 3 attempts and was finally successful at the rescue of all crew members who were alive, in good health, and in good spirits—all because of his leadership.

Shackleton’s leadership successes led me to reflect on leaders in my life who had *The Shackleton Way*³ including my past residency directors, Drs Richard E. Dean and Donald Scholten; my fellowship director Joe Civetta; Department of Surgery chairs Donald E. Fry and Russell Postier; and my mentors Dr Christine Grant, former Iowa women’s athletic director, Dr Anna Ledgerwood, Dr Mary McCarthy, and Dr Mattie Horst. Most of these individuals have been active in the leadership and membership of this organization.

The “Shackleton way” of leadership can be adapted to a many areas including medical teams. Shackleton needed to hire an outstanding crew for this dangerous and demanding trek. He found talent, he looked for optimism and cheerful-

ness, and he built a crew around a core of experienced workers. He sought and hired those with shared visions and creativity. He was able to create a spirit of camaraderie by observing before acting, establishing order and routine, breaking down traditional hierarchies and cliques, leading by example, keeping his door open to staff, and using informal gatherings to build esprit de corps. He was known to get the best from each individual by being generous with programs to promote well-being, matching the person with the position, being tolerant, giving consistent feedback, involving the crew in challenging and important work, and pushing them to reach their potential. He tried to make comfortable work environments so workers would spend more time at work, and he used informal gatherings to reward the group. He had the ability to lead effectively in a crisis, inspired optimism, and focused on the future not the past. His teams were formed for the tough assignments ahead of them, and he remained visible and vigilant. His teams were self-sufficient units; he empowered the team leaders with authority but kept an eye on the details. He gave the most tedious assignments to the workhorses because they do not complain, and he himself was self-sacrificing. His final trait of leadership was to overcome obstacles to reach a goal and leave a legacy. He was determined to get the job done, which meant getting all his men to safety after the loss of their ship the *Endurance*. He was guided by inspiration that had motivated others in times of crisis; he took risks, stepped outside to help others, and went for broke when the options were narrow. After the successful rescue of all his men from the tragedy they had endured, he allowed himself and others to be congratulated on a job well done.

With the influence of the leaders in my life that truly embodied the “Shackleton way,” I have tried to develop a drive to be supportive of teams and pulling together in all that I do from sports to patient care. The quote that accompanies the picture in the presentation is as follows: “Shackleton knew that making the stranded crewmen drag the lifeboats over rough, icy terrain was futile however it provided the crew something to do together as a TEAM to get out of their predicament.”

The people of Oklahoma really came together and worked as a TEAM after the 1995 Oklahoma City bombing. They realized after this disaster that if the lack of a trauma system impacted care for this devastating event it would also affect care during more common yearly and daily occurrences. Task forces and trauma committees were formed to designate trauma centers and develop a trauma system and a funding mechanism for that system. The past 10 years have seen the greatest strides in the development and refinement of that system.

The state has designated 103 level III/IV hospitals, but only 2 level II facilities and 1 level I for a population of over 3.5 million. The system in this rural state, as in other similar states, struggles getting the right patient to the right facility in the right amount of time because of distance,

weather, geography, and the availability of local professional and institutional resources.⁴ This situation was the subject of Dr Tabitha Garwe's Ph.D. dissertation and a recently published article. She reported that patients in Oklahoma who were transferred to the level 1 trauma center from level III/IV centers versus those directly transported from the scene to the trauma center are at a significantly increased risk of short-term (30-day) mortality. In addition, she found that those patients initially treated at nontertiary trauma centers had a mean time to definitive care of 310 minutes (\pm 165), which is well over the golden hour.⁵

These findings have been disappointing given that leaders from the Oklahoma State Department of Health; the Oklahoma Institute of Disaster and Emergency Medicine; prehospital, urban, and rural facilities; and our trauma team have invested numerous hours in attempting to improve the trauma system and triage and transfer for trauma patients. These leaders developed, extensively educated, and implemented guidelines for prehospital trauma triage and transport as well as developed interfacility transfer protocols to direct the most severely injured patients to the most appropriate facility. EMResource/EMSystem was established to provide web-based, up-to-the-minute availability of capabilities, and the capacity of designated trauma centers. The facilitation of interfacility transfers was expedited by a "1-call" contact line and a state-wide dedicated transfer center to connect transferring facilities to the most appropriate recipient facility. Most importantly, the system and care of the trauma patient are supported by funds from taxes, fees, and fines that were voted into law by the citizens of Oklahoma. This legislation additionally ensured that funds were available to all disciplines in the continuum of trauma care. Finally, there was an expansion of aeromedical prehospital providers to assist in the transportation of the patients from the scene or interfacility.

In our own attempt to promulgate the trauma system, members of the trauma team at the University of Oklahoma Medical Center conducted 18 rural trauma team development courses.⁶ This is a team training course developed by members of the ad hoc committee for Rural Trauma of the American College of Surgeons Committee on Trauma, specifically, Dr. Tom Foley, a prior council member of Midwest Surgery Association, in conjunction with Dr. James Kessel and Dr. Doug Schmitz.

This course has been one of the joys of mine to teach these past few years. I really believed this course would/will make a difference in the quality and timely care of the injured patient in our rural state. Briefly, the course is a 1-day curriculum that is designed to be taken out to the rural facilities. It is oriented toward all members of the health care team who might be faced with providing care for the injured in environments with constrained resources. The basic premise of the course is the assumption that, in most situations, rural hospitals can provide 3 individuals to form the core of a trauma team consisting of a team leader (a physician or physician extender), team member one (a

nurse), and team member two (an additional individual who could be a nurse, aide, technician, prehospital provider, or clerk). The course emphasizes the initial care and resuscitation of the trauma patient using didactic lectures, interactive scenarios, and skills demonstrations. Finally, the course primarily focuses on the elements of the primary survey of the trauma patient and an early decision to transfer if the patient is beyond the capability of the institution. Our team elected to teach the course at facilities that transferred a significant number of patients to our institution or had experienced delays in transfers. The courses were positively received, and we got excellent feedback regarding an understanding of the trauma triage and transfer system, but when we looked at pre- and post-course transfer times we did not appear to have had an impact on the time to definitive care. This finding very much concerned us and stimulated us to investigate reasons why this occurred and how to improve these results. We did find that we were not alone in our findings. Dr. Renae Stafford has presented that the right individuals are not attending the rural trauma team development course (RTTDC), even when given locally and provided with free educational credits.⁷ If the key individuals are not present, the impact of the course is limited. We noted similarly that few physicians or midlevel providers were able to break free from their clinical commitments to attend a course in their local community, thus affecting our teaching goal of early transfer. In the spirit of maintaining hope and stimulating the team to continue its efforts, additional support was found in Dave Kappel's recent publication.⁸ Dr. Kappel, one of the principle authors of the 3rd edition of the RTTDC, published a longitudinal study performed in 18 level III and IV trauma centers in West Virginia. He noted that the RTTDC alone and RTTDC with an embedded communication module significantly reduced delays in transfer. The 3rd edition of the course and these new findings have reinvigorated our team to press on and schedule additional courses this year. Another draw of the RTTDC for our team has been the ability to make adaptations to the needs of the facilities and allow instructor teams to make some approved modifications in teaching methods to fit the needs of the facility, the system, and team teaching of the course.

The 3rd edition of the course has been revised to include additional demonstrations, videos, and an additional module regarding communication,⁶ thus, the 2nd skill of the 4 I previously mentioned in the TeamSTEPPS model for team interaction. The final 2 skills, mutual support and situation monitoring, complete the necessary requirements for a highly functioning team. In order for teams to engage in the teamwork behaviors necessary for sustaining high levels of performance in crises, the team members must have a shared understanding of the team and their task, have clear roles and shared vision, optimize resources, engage in feedback, and collaborate. Members must monitor the situation, and they must possess what the military and aviation have defined as situation awareness: "the perception of the elements in the environment within a volume of time and

space, the comprehension of their meaning and the projection of their status in the near future.”

Situational awareness of team members, knowing what is going on around them and with others, is critical in numerous events or emergency situations in which there is a rapidly ever-changing environment whether it is aviation, forestry, military, anesthesia, intensive care, or trauma resuscitations. In the situation of trauma resuscitations, the team needs to perceive the physical and physiological problems of the trauma patient, comprehend the potential causes of these problems, understand their capabilities and project if it is beyond their facilities capability, and call for early transfer. Within the confines of the RTTDC, our team has been searching for a better way to teach and evaluate these skills.

The typical moulage scenarios have not been working. We find a lack of engagement and role playing by team members. This is potentially because of the reality of the scenarios or the fact that there are no consequences in the situation. The students know that no patient is going to die that day, and there is no test to be taken at the end of the day to pass the course and thus do not put full effort forth in the scenarios. There was 1 exception; we took the course on the road with Dr. Doug Schmitz (course founder) to Ft. Irwin, CA. We found that the medics, health care providers, and military physicians were serious. They were familiar with simulation mimicking real-life scenarios and were disappointed with our nonsimulation moulage scenarios. I came back rejuvenated and determined to improve our efforts in the course to emphasize teamwork and improve the scenarios to more accurately reflect real-life situations. We first began investigating the use in the RTTDC of high-fidelity life-size mannequins that exhibit physiological and physical findings as well as procedural capabilities. The mannequins will allow the development of a more representative real-life scenario to teach resuscitation, procedural skills, improved decision making, and timelier decisions to transfer patients who have injuries beyond the level of care at a rural facility. Also, we have been searching for an evaluation tool that will provide real-time feedback, measure the success of the exercise, and allow for the administration by a limited number of instructors at a remote location with limited technology.

The use of the high-fidelity simulators is not new in medical and surgical education, and a number of individuals in this association have published their use of simulation training versus standard lecture formats in medical student and resident training. The evaluation and measurements of individuals and teams in simulation training have included identical multiple-choice tests, broad outcome measures, attitude or self-assessment surveys, process measures, event-based assessments, and observational-based measures. Centers performing graded observational scores of videotapes of individuals performing trauma resuscitations have shown simulation training to be superior to traditional moulage training.⁹ Holcomb et al¹⁰ had trained observers' review tapes of high-fidelity simulator trauma resuscitation and grade the skills of a 3-person military team before and after a 28-day civilian trauma center rotation.

He noted an overall improvement in 5 scored unique human performance assessments and 8 timed tasks, with the exception of organizational and recognition for early operation when compared with the expert team. Knudson et al,¹¹ using expert videotape review of numerous graded tasks and observed behaviors, noted that resident teams that received simulation training scored higher in teamwork, decision making, situation awareness, and crisis management than residents who received didactic lecture training in trauma evaluation. Additionally, using the components of the TeamSTEPPS program augmented by simulations can improve outcome parameters and performance observational scores during live trauma resuscitations. Finally, trainees seem to like simulation. The incorporation of high-fidelity simulation scenarios has resulted in improved satisfaction using a 5-point Likert scale when compared with the traditional scenario skills training in numerous areas of specialty training.

Although these studies provided positive findings of the benefit of simulation in the improvement of trauma team resuscitations, the evaluation tools they used were not validated, they were very labor intensive, and the majority required videotaping and/or numerous trained observers, conditions that would not be feasible when evaluating the effects of simulation training as part of the RTTDC. The traditional checklist, which is used in the advanced trauma life support course, has had doubt cast on its validity as a measure of clinical competence.¹² It is based on singular pieces of information, provides little insight into the decision-making process of the trainee, and rewards thoroughness rather than competence.¹³ Checklists neglect higher components of clinical competence such as empathy and the organization of knowledge in favor of simple linear accumulation of facts.¹⁴ An assessment tool that has become most interesting in trauma training and potentially useful to evaluate a simulation component for the RTTDC is the Situation Awareness Global Assessment Tool (SAGAT). SAGAT has been used in other fields interested in performance in intense, dynamic situations and has been adapted by Hogan to use for both individual and team trauma assessments.¹⁵ SAGAT is a tool developed to assess situational awareness across all of its elements based on a comprehensive assessment of operator requirements.¹⁶ It uses “stops” in the simulated situation, during which the trainees are turned away from the patient to issue queries to assess their perceptions at that moment in time. The query questions and answers are designed before the trial to assess level 1 (perception), level 2 (comprehension), and level 3 (projection) aspects of situation awareness. The responses of the trainee are compared against reality and thus provide an objective measure of situation awareness. The scenarios are designed to be approximately 15 minutes in length, with 3 stops/freezes per scenario. The queries are asked in a random fashion to access each level of situation awareness. Hogan has shown in dynamic simulated trauma resuscitations that SAGAT and Team SAGAT are valid and reliable assessment tool.¹⁵ Individuals and teams with more experience

have greater scores, and the scores correlate strongly with traditional checklist trauma moulage scores. SAGAT is superior to checklist evaluations in that it provides more in-depth assessment of knowledge, awareness, and hierarchical problem solving. It focuses to improve global patient management skills rather than the knowledge of procedural algorithms. SAGAT creates stops specific for multidisciplinary team members and thus provides individual and team assessment simultaneously. Postassessment of SAGAT training has also revealed overall satisfaction from the trainees and that the majority (88%) felt the stops had no impact on performance or concentration. Finally, SAGAT can be done with few observers, it is interactive, and there can be immediate debriefing and feedback and teaching of individuals and the team. This makes this a useful technique to complement the RTTDC.

I wanted to tantalize you today with this evaluation tool, and I wish I could give you data regarding its use in our RTTDC training; we just recently received the 3rd edition for RTTDC and permission from the founders of the course to proceed with the simulation training and assessment. I hope that I will be able to present our findings at an upcoming MSA meeting and show that the new course with the addition of simulation and the SAGAT technique improves management of the trauma patient at rural facilities and stimulates timely decisions to initiate the transfer of patients to a higher level of care. I would love to see more articles in our local paper about trauma survivors, more pictures of survivors on our wall in the intensive care unit, and more people at our annual trauma survivor's banquet. Before I stop I want to thank my coworkers and also my family for their love, support, and understanding of my passion for what I do, which takes time away from them.

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