Impact of a TeamSTEPPS Trauma Nurse Academy at a Level 1 Trauma Center

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Contribution to Emergency Nursing Practice

- Growing evidence links trauma teamwork training to superior team performance, patient outcomes, and quality of care.
- Education and training for emergency nurses, as essential members of the trauma team, should ensure clinical and teamwork competence.
- Well-designed education incorporating TeamSTEPPS® and multidisciplinary simulation-based training may improve emergency nurse knowledge, confidence, and team member performance in high-risk resuscitation settings.

Abstract

Problem: Nurses are crucial members of the team caring for the acutely injured trauma patient. Until recently, nurses and physicians gained an understanding of leadership and supportive roles separately. With the advent of a multidisciplinary team approach to trauma care, formal team training and simulation has transpired.

Methods: Since 2007, our Level I trauma system has integrated TeamSTEPPS (Team Strategies & Tools to Enhance Performance & Patient Safety; Agency for Healthcare Research and Quality, Rockville, MD) into our clinical care, joint training of nurses and physicians, using simulations with participation of all health care providers. With the increased expectations of a well-orchestrated team and larger number of emergency nurses, our program created the Trauma Nurse Academy. This academy provides a core of experienced nurses with an advanced level of training while decreasing the variability of personnel in the trauma bay. Components of the academy include multidisciplinary didactic education, the Essentials of TeamSTEPPS, and interactive trauma bay learning, to include both equipment and drug use. Once completed, academy graduates participate in the orientation and training of General Surgery and Emergency Medicine residents' trauma bay experience and injury prevention activities.

Results: Internal and published data have demonstrated growing evidence linking trauma teamwork training to knowledge and self-confidence in clinical judgment to team performance, patient outcomes, and quality of care.

Implications for practice: Although trauma resuscitations are stressful, high risk, dynamic, and a prime environment for error, new methods of teamwork training and collaboration among trauma team members have become essential.

Key words: Teamwork; Nurse; TeamSTEPPS; Trauma; Simulation

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Introduction

Nurses working in the acute trauma setting are an essential component of the trauma resuscitation team. Trauma nurses must use well-developed assessment, management, and team communication skills to provide optimal care to the critically ill trauma patient. Skilled communication in interdisciplinary teamwork is the cornerstone of safe, high-quality health care.[1,2] Ineffective teamwork and communication failures account for a majority of health care errors in high-risk settings,[3] particularly in the trauma resuscitation setting.[4]

Recent systematic reviews and meta-analyses found interprofessional teamwork training to be an evidence-based strategy to improve team performance and clinical outcomes in the health care environment, including those incorporating simulation-based training (SBT).[5–8] A number of studies,[9–12]

including an original teamwork study conducted in our own institution,[13] report improvements in trauma teamwork, communication, and performance after implementation of multidisciplinary SBT interventions. Additional studies report increased clinician confidence, perceptions of safety, and performance following trauma teamwork training.[14–18]

TeamSTEPPS (Team Strategies & Tools to Enhance Performance & Patient Safety; Agency for Healthcare Research and Quality, Rockville, MD), developed by Department of Defense in collaboration with the Agency for Healthcare Research and Quality, is an evidence-based framework designed to improve patient outcomes by enhancing communication and teamwork skills among health care providers.[19] Our health care system served as a federally funded TeamSTEPPS team resource training center from 2006 to 2011. In 2007, members of our trauma service completed TeamSTEPPS Master training. Subsequently, a trauma TeamSTEPPS strategy for the resuscitation setting was developed, expanded, and evaluated over a 9-year period.[20] Improvements in trauma team performance and quality outcomes in the facility were achieved.[13,21–22] Critical elements of this strategy included implementation of TeamSTEPPS training in conjunction with high-fidelity multidisciplinary SBT. This article provides an overview of the components and outcomes of the Trauma Nurse Academy, an emergency department (ED) trauma nurse training program, as a part of the comprehensive multidisciplinary TeamSTEPPS program at a Level 1 trauma center.

Local Problem

Over the past decade, our emergency department experienced substantial growth in square footage, number of patient beds, and an increased staffing matrix. This high-volume, high-acuity ED environment, combined with the department's continued growth, led to an ever- changing mix of experienced and new graduate RNs. The department doubled in size in 2007, leading to hiring of the largest number of new graduate RNs in our ED history. Department expansion required an additional 17 full-time RN positions over the past 5 years, which—when combined with average turnover—equals approximately 38 new-hire RNs every year since 2012. At present, 144 RNs practice in our emergency department with varying years of nursing experience. Our data reveal that 30% of the RNs have more than 5 years of nursing experience, 23% have between 2 and 5 years of experience, and 47% have less than 2 years of experience.

With emergency nursing staff numbers exceeding 100 nurses, many staff members rotated through the trauma assignment, creating long gaps between assignments and little chance of developing familiarity with the location of supplies, use of complex equipment, and knowledge of TeamSTEPPS methods. Trauma performance improvement data, nursing staff, and physician feedback in the trauma resuscitation setting during this time of rapid ED expansion was increasingly more negative, pointing to the need for a new comprehensive emergency nurse orientation pathway into the trauma bay.

Methods

All studies conducted in association with our trauma Team-STEPPS training program underwent required Institutional Review Board or quality improvement study approval processes.

Setting

A not-for-profit, 737 bed, Level I trauma center with an additional 60-bed Neonatal Intensive Care Unit is located in the southeastern United States. The 66-bed emergency department maintains an average volume of 225 patients daily, with an annual volume of more than 82,000 patients. Trauma resuscitation activations exceed 2,200 annually.

Measurements

Use of a comprehensive multilevel approach to assess outcomes of our trauma teamwork training program has been used over the 9-year program history. The evaluation program uses the 4 levels of learning as described by Kirkpatrick, including reactions to training, learning, team behavior, and patient outcomes.[23] Nurse knowledge, skills, and attitudes are assessed in addition to overall trauma team performance and outcomes. The instruments used for evaluation at our facility included the following: (1) Level I: standard participant course evaluation to gauge opinions for usefulness and likeability of the program; (2) Level II: knowledge-base testing format using a 22-item multiple-choice test composed of clinical questions extracted from the Society of Trauma Nurse e-library test bank and TeamSTEPPS Master Trainer Examination; a 5-point Likert scale (1-Very Low; 2-Low; 3-Moderate; 4-High; 5-Very High) questionnaire to rate confidence in assessment and management of trauma patients; and skill-training checklists; (3) Level III: trauma team performance evaluation using the validated Trauma Team Performance Observation Tool (TTPOT)[24] completed by trained evaluators to rate Leadership, Situation Monitoring, Mutual Support, Communication, and overall team performance; and (4) Level IV quality outcomes using our organization's trauma registry data to compare pre- and post-teamwork training efficiency metrics and clinical outcomes.

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