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Role confusion and self-assessment in interprofessional trauma teams



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Abstract

BACKGROUND: Trauma care requires coordinating an interprofessional team, with formative feedback on teamwork skills. We hypothesized nurses and surgeons have different perceptions regarding roles during resuscitation; that nurses' teamwork self-assessment differs from experts', and that video debriefing might improve accuracy of self-assessment.

METHODS: Trauma nurses and surgeons were surveyed regarding resuscitation responsibilities. Subsequently, nurses joined interprofessional teams in simulated trauma resuscitations. After each resuscitation, nurses and teamwork experts independently scored teamwork (T-NOTECHS). After video debriefing, nurses repeated T-NOTECHS self-assessment.

RESULTS: Nurses and surgeons assumed significantly more responsibility by their own profession for 71% of resuscitation tasks. Nurses' overall T-NOTECHS ratings were slightly higher than experts'. This was evident in all T-NOTECHS subdomains except "leadership," but despite statistical significance the difference was small and clinically irrelevant. Video debriefing did not improve the accuracy of self-assessment.

CONCLUSIONS: Nurses and physicians demonstrated discordant perceptions of responsibilities. Nurses' self-assessment of teamwork was statistically, but not clinically significantly, higher than experts' in all domains except physician leadership.

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Early care of the injured patient is a complex, time-critical endeavor, requiring the coordination of an interprofessional trauma team. Preventable deaths occur even in mature trauma centers, with a third of errors occurring during the initial evaluation and resuscitation in the emergency department.^{1,2} Lapses in teamwork nontechnical skills (NOTECHS) are postulated to be a major source of error and provide a target for training and performance improvement efforts.³⁻⁵ Excellent teamwork mandates rapid and appropriate role assignment and task allocation,⁶ which can be difficult in the "extreme action" venue of

trauma, where teams are assembled ad hoc, comprised of interdisciplinary team members of varying titles, training, and skills. The evolving roles of advanced clinical practice nurses, flattening of the traditional physician leader hierarchical culture, and a dynamic delegation style of leadership⁷ may contribute to confusion regarding relative physician vs nurse responsibilities during resuscitation.

In addition to a shared mental model regarding team members and roles, optimizing trauma teams require ongoing, accurate assessment, and feedback about teamwork process. We previously developed a rating tool, T-NOTECHS, for evaluating teamwork and providing formative feedback to trauma teams.⁸ We found that T-NOTECHS ratings were more accurate and concordant after video review, compared with direct observation and immediate scoring, in simulated trauma resuscitations. However, videotaping and debriefing of actual trauma resuscitations can be costly, time consuming, and may increase malpractice liability exposure.⁹ Thus, the standard practice in many institutions, including ours, is to perform immediate physician-led debriefing of critical trauma cases. This practice may be limited by the reported inaccuracy of physician self-assessment of NOTECHS.^{10,11} Nurses have been pioneers in the field of interprofessional communication,¹² and ostensibly might be more capable than physicians in assessing interprofessional teamwork. However, more data are needed regarding nurses' accuracy in self-assessment and the relative benefit of video review vs immediate postresuscitation rating and assessment.

We propose that nurses and surgeons on modern interdisciplinary trauma teams may have discordant views regarding their roles during trauma resuscitation. We further hypothesized that nurses' self-assessment of teamwork may differ from expert assessment, and that video debriefing might improve the accuracy of self-assessment.

Methods

This study was conducted at a level II trauma center, where ad hoc trauma teams comprised emergency medicine and trauma attending physicians, medical students, residents, physician's assistants, advanced practice nurses, and, for critically injured patients, an anesthesiologist, surgical critical care fellow, and respiratory therapists. Emergency department trauma nurses who were enrolled in a trauma refresher curriculum and attending trauma surgeons gave informed consent to participate in this Institutional Research Review Committee-approved study.

Nurses were surveyed regarding their background and prior team training. Trauma surgeons and nurses were then independently surveyed regarding their baseline perception of the relative responsibilities of nurses vs physicians during trauma resuscitation. Survey items included 17 typical trauma resuscitation tasks. Practitioners completed a 7-point Likert-type scale, scoring each task as the

responsibility of a trauma nurse (score = 1), physician (score = 7), or an equally shared responsibility (score = 4).

After the survey, nurses participated in 90 minutes of web-based didactic and live lecture, reviewing teamwork principles and NOTECHS assessment using T-NOTECHS.⁸ T-NOTECHS evolved initially from a NOTECHS scale developed for aviation, and is based on 5 behavioral domains: leadership, cooperation and resource management, communication and interaction, assessment and decision-making, and situation awareness/coping with stress, illustrated by 47 behavioral exemplars. Domains were rated on a scale of 1 to 5, where 1 = no demonstration of the skill, and 5 = flawless demonstration of the skill. Subsequently, during scheduled half-day sessions, groups of 3 to 4 nurses joined multidisciplinary teams including confederates (surgeon, emergency physician, respiratory therapist, resident) and completed 4 standardized, 10-minute, video-recorded human patient simulator-based (SimMan, Laerdal, Wappingers Falls, NY) trauma resuscitation scenarios. Scenarios were presented in a random order, and depicted blunt trauma and burn cases with critical pathophysiology and complex psychosocial, communication and resource management issues (Table 1).

Immediately after each scenario, teamwork was independently and confidentially assessed from memory (without video review) by nurses ("self-assessment"), and by 2 physician trauma teamwork "experts" (S.S. and B.B.) using T-NOTECHS. Experts were board certified in critical care, each with greater than 25 years of clinical trauma experience and greater than 5 years in teamwork training, familiar with the use of T-NOTECHS, and demonstrating satisfactory (intraclass correlation coefficient = .71) concordance in T-NOTECHS rating of videotaped trauma resuscitations. After initial teamwork scoring, nurses participated in a 30-minute structured, facilitated video debriefing emphasizing T-NOTECHS domains, and aligned with evidence-based recommendations for effective debriefing.¹³ After structured debriefing for each scenario, nurses independently repeated T-NOTECHS self-assessment teamwork scoring. Nurses were surveyed before and after completion of all the simulation scenarios regarding their confidence using T-NOTECHS and their perceptions regarding the ability of T-NOTECHS to accurately reflect essential elements of teamwork during trauma resuscitation.

Statistical analysis

Nurses' baseline characteristics were described by mean and standard deviation, and frequency and percentage. Wilcoxon nonparametric test or 2-sample *t* test was used to analyze differences between surgeon and nurse perceptions of responsibilities for each resuscitation task. For each teamwork domain (range, 1 to 5) and overall score (range, 5 to 25), paired *t* tests were used to compare nurses' average T-NOTECHS ratings for either predebriefing or

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