The Trauma Report Nurse: A Trauma Triage Process Improvement Project

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Introduction: Accurate trauma triage is imperative to facilitate appropriate resource mobilization for severely injured trauma patients. A critical window of opportunity exists to prevent secondary injury or death. Timely assessment with a multidisciplinary trauma team is essential to facilitate rapid diagnosis and treatment. However, consistent and accurate trauma triage proved daunting at our institution, resulting in instances of undertriage.

Methods: A process improvement strategy aimed at improving trauma triage accuracy was implemented. An innovative role, the trauma report nurse (TRN), was created and became the trauma nurse expert. The TRN was responsible for assigning a trauma triage level to all incoming adult and pediatric trauma patients. In parallel, improvements were made to the prehospital report format, increasing standardization and clarifying hand-off verbiage.

Results: Undertriage rates dropped from 14% to 4.8%. Qualitative data demonstrated acceptance and support of the TRN role among physicians, nurses and nursing and ancillary staff.

Discussion: Designating trauma triage to an ED registered nurse proved to reduce undertriage rates. By providing staff education, infrastructure improvements, and leadership support, the role continues to thrive, resulting in improved care for severely injured trauma patients.

More than 30 million people seek trauma care in the United States annually.[1] A critical window of opportunity exists to stop bleeding and the irreversible damage that ensues.[2] Severe chest and abdominal trauma can result in death within 60 minutes of injury.[3] Assessment with a multidisciplinary trauma team is essential for the severely injured patient because it facilitates rapid diagnosis and treatment. However, patients with lesser injuries may not require a full team response. Although a certain amount of overtriage is required to ensure that potential life-threatening injuries are not missed, overactivation can divert providers from other critically ill patients. Correct trauma triage is important for optimal resource utilization.[4]

Trauma triage is a process of matching patient presentation with defined objective criteria, based on the American College of Surgeons recommendations, to determine the appropriate resource response. Nationally, nomenclature for defining trauma team responses is quite variable (eg, level 1, trauma red, and highest tier). At our hospital, patients are triaged into 1 of 3 categories, with level 1 being the most severely injured and level 3 the least severely injured. Timely and accurate triage had proven to be a daunting task for many years. Six months prior to the process change, undertriage rates averaged an unacceptable 14%. This article will describe a process improvement strategy that was put in place to increase the trauma triage accuracy and properly direct our trauma team response to these high-acuity patients.

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Clinical Setting

Saint Marys Hospital–Mayo Clinic is a rural level I adult and pediatric trauma center located in Rochester, MN, serving southeast Minnesota, western Wisconsin, and northern Iowa. The trauma centers facilitate care of approximately 2500 patients per year, of which 50% are referred from other facilities.

The Trauma Team

A level 1 trauma activation elicits trauma surgeons, emergency medicine (EM) physicians, trauma residents, EM residents, respiratory therapists, pharmacists, emergency nurses, intravenous (IV) transfusion nurses, radiology technicians, laboratory technicians, operating room (OR) charge nurses, and anesthesia providers. The team is modified for a level 2

response with IV transfusion nurses, an OR charge nurse, and anesthesia providers "on call" but not required to report immediately. The trauma surgeon has up to 6 hours to see the patient, but generally evaluates him or her within an hour. For pediatric activations (ie, for patients younger than 15 years), the response to both levels includes pediatric specialists in the majority of the responder categories.

A Need for Standardization

A review of trauma triage decisions identified several communication issues from the field to the trauma bay. All incoming radio traffic was taken by the Emergency Communication Center (ECC) and then relayed to the emergency department via multiple pathways (ie, text pages or phone calls). The ECC is located in a separate building across the street from the emergency department. This remote location, coupled with an intermediary who obtained the trauma patient report, posed a unique challenge, because the ED staff did not directly communicate with prehospital providers.

Before the standardized process was implemented, trauma patients were triaged either by prehospital providers, EM physicians, or not at all. The EM physicians were already responsible for supervising the highest acuity patients in the emergency department and often were not available to take prehospital report. The variable levels of training, ranging from first responders to advanced flight nurses, proved to be another challenge. The result was providers with wide-ranging knowledge of the trauma activation criteria. The process and knowledge variability across the continuum resulted in a high level of undertriage. Decreasing the undertriage rate was the most sought-after outcome. Improving staff satisfaction was another goal of the implementation team. These outcomes would be measured by reviewing staff surveys and by comparing triage rates before and after the intervention with use of the Fisher exact test.

Intervention

DEFINING AND NAMING THE ROLE

An innovative role, the trauma report nurse (TRN), was created. This trauma nurse expert was responsible for assigning a trauma triage level to all injured adult and pediatric patients and activating the appropriate trauma team. The TRN maintained situational awareness over 12 ED critical care beds, prepared for incoming patients, mentored novice nurses, coordinated bed assignments, prepared the trauma bays/equipment, and facilitated patient dispositions. In essence, the TRN functioned as an assistant charge nurse of the ED critical area.

TRN SELECTION PROCESS

TRN selection was based on one or more of the following criteria: charge nurse experience, involvement with the ED Nursing Trauma Committee, completion of the Advanced Trauma Care for Nurses course, and trauma ICU or prehospital experience. TRNs were also expected to have a positive attitude toward change, flexibility with an evolving process, and strong communication skills. Likewise, critical thinking skills and decisiveness were imperative to synthesize incoming information, utilize the trauma triage criteria (Figure 1) and activate the optimal team response. The initial group was limited to 28 nurses so changes to the pilot program could be made quickly and efficiently. This number was chosen to ensure each TRN would have adequate experience to develop proficiency while maintaining coverage 24 hours a day, 7 days a week.

EDUCATION

All TRNs and ED charge nurses were required to attend a 1-hour course. Formal staff education was conducted utilizing several methodologies. The class covered roles, responsibilities, leveling criteria, policies, procedures, and radio etiquette. Case studies applying the knowledge were also incorporated. These case studies included the patient's age, mechanism of injury, vital signs, and injuries found. The TRN students were then required to assign a level and provide the rationale. ED charge nurses were included because they were the designated backup in the rare case the TRN was unavailable.

Radio communication with prehospital providers was a new skill for many registered nurses (RNs). A script was developed to aid in this learning curve, which began with "*Gold Cross Ambulance, this is the trauma nurse. Go ahead with report.*" The following types of replies were possible:

1. If all the necessary information was received to accurately assign a triage level to the patient, a typical response was, "*Copy patient report. See you in 10 minutes.*"
2. If information was still needed, a typical response was, "*Copy patient report. What is the patient's GCS*?"
3. If the report was unclear, a typical response was, "*Copy patient report. Please verify BP.*"

After formal education was completed, several valuable strategies were incorporated into the pilot phase reinforcing all educational components. These enhancements will be discussed in the procedure section.

PROCEDURE

On April 27, 2009, a 3-month pilot phase was initiated. The TRNs were given a dedicated phone and were instructed that their priority was to answer all trauma calls. They were to

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