

The Use of a Dedicated Trauma Nurse Lead Program to Improve Massive Transfusion Protocol and Anticoagulation Reversal Protocol

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Abstract

One of the goals of the Trauma Nurse Lead program at Grand Strand Medical Center is to provide thorough evidence based practice with balanced resuscitation and assist in prevention of further bleeding in our traumatic brain injury patients through anticoagulation reversal protocol. These key points are essential to the survival and decreasing morbidity in this subset of critically ill trauma patients.

Introduction

The trauma nurse lead (TNL) program is made up of ten specially trained nurses at a Level I Adult, Level II Pediatric trauma center. Within our trauma population, there are approximately fifty cases a year requiring massive transfusion protocol (MTP) activation and an equivalent number of cases a year requiring anticoagulation reversal protocol (ACRP). Prior to September 2015, emergency department nurses rotated through the trauma resuscitation based on assignments. There was a lack of dedicated trauma nurses for this subset of critically ill patients leading to lack of compliance and ability for performance improvement indicators.

Methods and Materials

Patients requiring MTP and ARCP are some of the most critical on a trauma service. The importance of balanced ratios and prevention of coagulopathy is essential in survival and decreased morbidity in this patient population. In recognition of this, electronic performance improvement tracking initiatives were developed for concurrent and retrospective review and analysis of the study population. The plan for this performance improvement project was to evaluate patient outcomes and further optimize care to the critically injured trauma patient.

Results

Implementation of the TNL program significantly improved TXA activation times from an average of 54.6 minutes to 31.6 minutes ($p=0.018$). While not significant, MTP activation times decreased 20.0 percent and ACRP activation times decreased 62.6 percent following implementation of the TNL program. Ratios are also much more balanced, mirroring the 1:1:1 ratio recommended by the ACS while using ROTEM to guide transfusions. Furthermore, dedicated care to the trauma patient led to improvement in patient outcomes. Despite caring for sicker MTP patients, post-TNL implementation improved patient outcomes with a significantly shorter length of stay, reducing the average from 35.1 to 21.6 hospital days ($p=0.012$).

Discussion

Currently, there are no evidence-based practices that involve a dedicated trauma nurse program and its benefits. Evaluation of the TNL program shows significant impact on nursing care of the trauma patient in the resuscitation bay as well as providing a resource to inpatient care. Use of the program strengthens the multidisciplinary trauma team by providing additional leadership, support, and education to the most critical patients.

Figure 1. Dedicated Blood Refrigerator



Figure 2. ACRP protocol presentation

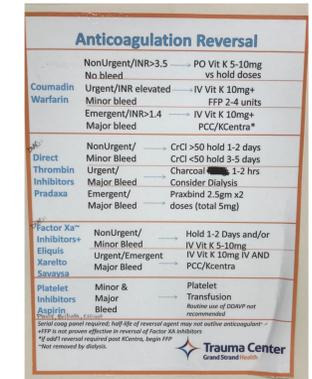


Table 1. MTP Length of stay.

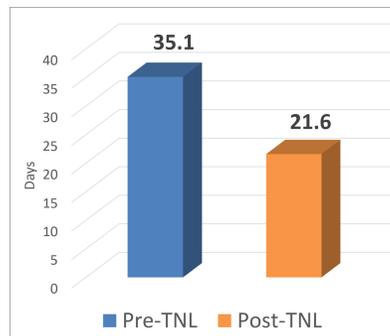


Table 2. Arrival to ACRP

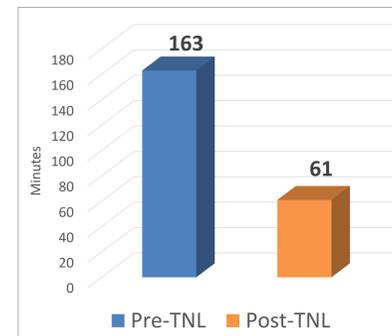


Table 3. Arrival to MTP Activation by Year

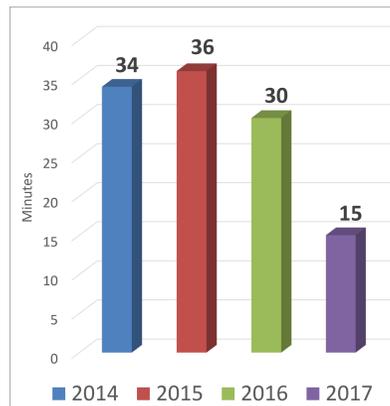
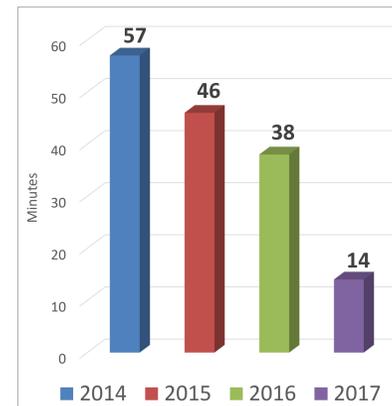


Table 4. Arrival to TXA Admin. by Year



Conclusions

A dedicated trauma nurse response is essential to improve patient outcomes, provide clinical leadership in trauma care, and impact future performance through best practice and protocol utilization. Implementation of the TNL program has made it possible to improve indicators such as arrival to activation for MTP, balanced resuscitation, and decreased time to reversal for ACRP. Through this analysis, further opportunity was identified to increase the utilization of ROTEM and provide triggers for TNL consultation on patients needing ACRP that are not activated as trauma alerts. It is highly recommended that all trauma centers develop a dedicated trauma nurse response to improve the care and outcome of critically injured patients.

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