

Optimizing trauma activation criteria into a nursing driven tool for appropriate activation levels

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The challenge identified:

During review of December 2017 statistics at our ACS verified Level I Trauma Center, we noticed that our under-triage rate per the Cribari method was on the rise nearing 10 percent. The issue of undertriage has long been a priority due to the potential preventable mortality and morbidity associated with delays in activation of trauma teams and definitive care provided to trauma patients (American College of Surgeons, 2014). We congruently discovered several trauma patients that were not properly activated based on our internal activation criteria. The patients ultimately were reviewed via our PIPS process and it was identified that improper activation and lack of communication between pre-hospital, nursing staff and providers led to some of the improper levels of activation for these patients.

Objectives:

A tool was developed for nurses to use for proper activation based on pre-hospital information. The time-frame of implementation of this tool has a direct correlation with our under-triage rates decreasing. After initial implementation of the tool in January 2018, our under-triage rate decreased from 9.4% in December 2017 to 3.6 by August 2018.

Project Design:

An internal activation criteria tool was developed to mirror our activation criteria. This tool was included in the trauma flowsheet packets. Check boxes indicated the mechanism, vital signs, and other criteria that met our internal activation levels. The focus of the tool is for nurses receiving the notification of impending arrival of injured patient to ask clarifying questions and be able to appropriately activate based on the information obtained. The trauma nurses in the Emergency Department (ED) were instructed on the tool and recent patient scenarios of improper activation levels were discussed during the monthly trauma nurse meeting as well as at shift change. The purpose and importance of the tool was also described to the nurses who would predominantly be completing the tool. The Trauma Program Manager (TPM) also educated the charge nurses who would potentially be getting notification of injured patient arrival via pre-hospital communication.

Sustaining the change:

Sustaining the change was done by focusing on the use of the tool with every potential trauma activation. The tool was continually addressed during the first quarter of 2018 and periodically through the second quarter at both the monthly trauma nurse meetings as well as the monthly trauma team leader meetings. The completion of the tool was also included as part of the trauma nurses' monthly flowsheet audits performed by the PI nurses. The discrepancy of incorrect activation or omission of tool was directly communicated to the nurses as well as TPM and ED Director to ensure compliance of use. Implications of the findings suggest that familiarity of trauma activation criteria and empowerment of nurses that are directly involved in trauma care will improve under-triage rates of trauma activation. Although there have been two outlier months with higher under-triage percentages, the data show a gradual decreasing trend. Future steps would be to use the trauma tool to review activation criteria with the addition of other morbidity and mortality inducing risk factors (Jammula, et al., 2018) to ensure judicious use of our resources for our highest level of activation.

References:

American College of Surgeons, Committee on Trauma. (2014). Resources for Optimal Care of the Injured Patient. Available from <https://www.facs.org/-/media/files/quality%20programs/trauma/vrc%20resources/resources%20for%20optimal%20care.ashx>

Jammula, S., Bradburn, E. H., Gross, B. W., Cook, A. D., Reihart, M. J., Rogers, F. B. (2018). The magic number: Are improved outcomes observed at trauma centers with undertriage rates below 5%? Journal of Trauma and Acute Care Surgery, 85(4), 752-755. doi: 10.1097/TA.0000000000002002

TRAUMA RED

Specific injury with abnormal vital signs and level of consciousness:

- GCS ≤ 10
- Shock
- Systolic BP ≤ 90 mm Hg
 - Age ≤ 8 ≤ 80mm Hg
 - Age ≥ 60 ≤ 110mm Hg
- Respiratory rate
 - ≤ 10 or ≥ 29 or ≤ 20 in a ≤ 1 yr old
- Unstable airway (i.e. intubated or emergent airway needed)

Assess injury:

- All penetrating injuries to:
 - Head, neck, torso, and extremities proximal to elbow and knee
- Chest trauma/ flail chest/ crepitus
- Motorcycle crash > 20mph
- 2 or more proximal long bone fractures (i.e. humerus or femur)
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist and ankle
- Pelvic fractures
- Skull fracture: open or depressed
- Paralysis
- Hanging with neurological or respiratory concerns
- Ejection (partial or complete) from the vehicle
- Auto vs. pedestrian/bicyclist thrown, run over, or with significant impact >20mph
- Falls
 - Adults: > 20 feet (1 story = 10 feet)
 - Children: > 10 feet or 2-3 times the height of the child
- Unstable patients transferred from other hospitals (i.e. receiving blood products to maintain vitals)
- Physician discretion
- Pregnancy > 16 weeks with an injury listed above-activate as **Trauma Red OB**

TRAUMA ALERT

Specific injury with abnormal vital signs:

- GCS 10-13
- HR ≥ 120 bpm

Falls:

- Adults: 8-20 feet
- 60yr ≥ 6-20 feet
- Children: 6-10 feet (1 story = 10 feet)

High risk auto crash:

- Intrusion site: > 12 inches, occupant site; > 18 inches, any site
- Death in same passenger compartment
- Rollover motor vehicle collision with injury

Sustained injury with:

- Patients at risk for **severe** TBI & on blood thinners or receives hemodialysis. (ASA, plavix, coumadin, factor Xa inhibitors, direct thrombin inhibitors, etc.)
- Burns with trauma mechanism and injury
- Physician discretion
- Pregnancy ≥ 16 weeks with an injury listed above-activate as **Trauma Alert OB**

TRAUMA CONSULT

Orthopedic injury:

- Requiring admission involving multiple extremities or pelvic fractures

Patients requiring admission:

- Facial traumatic injuries
- Neurological injuries
- Abdominal seatbelt sign
- Multiple rib fractures

Time-Sensitive:

- Extremity injury (i.e. compartment syndrome)

ADDITIONAL INFORMATION CONCERNING TRAUMA ACTIVATION

- If EMS notifies us of a 'Level 1' or 'immediate' patient then we will activate either a trauma '**Red**' or '**Alert**' based on our internal trauma activation criteria. Feel free to specifically ask EMS if they consider this pt to be a 'level 1' or 'immediate'.
- The nurse/ medic answering the patch phone may ask additional questions to help determine our internal activation level, but should remain mindful that the time the paramedic spends on the phone may be limited due to the needs of the patient. Time on the phone takes away from patient care.
- In addition, if EMS does not consider an incoming pt as a 'level 1' or 'immediate', but based on our internal activation criteria, this pt will require a trauma activation, please advise the crew. Simply state that this pt meets our internal activation criteria and that the trauma team will be activated. This will help prevent those surprises when they arrive here and are confused about meeting the trauma team.
- Lastly, please activate all injury/trauma patients arriving via air i.e. rotary or fixed wing.

Dignity Health
Chandler Regional Medical Center

Trauma Activation Tool

Trauma RED activation
(Mark your Rationale)

Specific injury with abnormal vitals/LOC

- Airway or Respiratory Compromise**
 - Intubated PTA or in trauma Bay
 - ≤ 10RR, ≥ 29RR
- GCS ≤ 10 with trauma**
- Low Systolic BP with trauma**
 - Confirmed ≤ 90mmHg
 - Age ≥ 60 & < 110mmHg
- Shock with Hx of trauma**
- Transferred pts receiving blood products to maintain vitals**
- Assessment of Injuries**
- Penetrating Injury**
 - Head, Neck, Chest, Torso (Abd/Pelvis)
 - Extremities above elbow or above knee
- Chest**
 - Flail Chest or Crepitus in Chest
- Neuro**
 - Open or Depressed skull deformity
 - Paralysis
 - Hanging
- Ortho**
 - Pelvic FX - instability
 - ≥ 2 long bone FXs- Humerus, Femur, Etc
 - Crushed, degloved, mangled or pulseless extremity
 - Amputation above wrist or above ankle
- MVC - MCC**
 - Auto vs. pedestrian/bicyclist thrown, run over, or with significant impact >20mph
 - Ejection (partial or complete) from the vehicle
 - Motorcycle crash >20mph
- Major Burns**
 - % TBSA & Injury
- Falls**
 - Adults >20ft
 - Pediatrics >10ft or 2-3 times the child's height (Reference: 1 story = 10ft)
- OB**
 - Pregnancy > 16 weeks with an injury listed in RED criteria - activate as "**Trauma Red OB**"
- Physician discretion**
(Name: _____)

Trauma ALERT activation
(Mark your Rationale)

Specific injury with abnormal vital signs/LOC

- GCS 10-13 with Hx of trauma**
- HR ≥ 120 bpm**
- Mechanism**
- High Risk MVC**
 - Intrusion: >12 inches - occupant site OR >18 inches - any site
 - Death in same passenger compartment
 - Rollover motor vehicle collision with injury
- Falls**
 - Adults: 8 ft - 20 ft
 - 60yr ≥ 6 ft - 20 ft
 - Children: 6-10 ft
 - (Reference: 1 story = 10 feet)
- Sustained injury with**
- Burns**
 - TBSA % & trauma / injury mechanism
- Patients at risk for severe TBI & on blood thinners or receives hemodialysis**
Consider Age > 65 with LOC & use of ...
ASA, Plavix, Coumadin, factor Xa inhibitors, direct thrombin inhibitors, etc.
- OB**
 - Pregnancy ≥ 16 weeks with an injury listed in Alert Criteria - activate as "**Trauma Alert OB**"
- EMS Judgement**
 - Called as an Immediate/Trauma but doesn't meet our criteria
- Physician discretion**
(Name: _____)

Consider:

- MVC/MCC- Rate of speed, Death on scene, intrusion
- GSW - Caliber, Gun type (handgun, shotgun, rifle)
- Did the patient lose consciousness?
- Upgrade to **Red**: Intubation, Blood products

-Activate all helicopter/flight patients unless otherwise directed by the Trauma Surgeon. Name of Surgeon *not* activating.

Print your Name & Title:

