

Trauma Secondary Level of Review: Development of Process/Outcome Core Measures for Collaborative Performance Improvement

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KEY WORDS: Trauma performance improvement and patient safety, core measures, drill down, audit filters, complications, levels of review, degree of harm, validity.

INTRODUCTION:

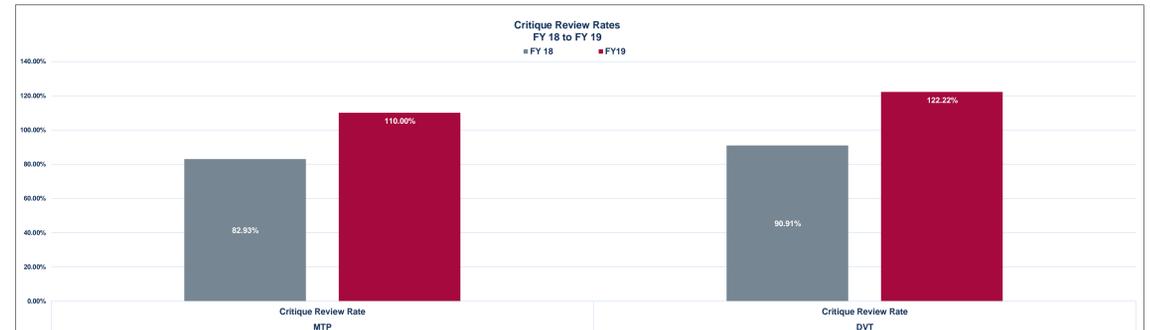
- Implementation and sustainment of an optimal Trauma Performance Improvement and Patient Safety (PIPS) process is a vital keystone that grounds a successful trauma program. The chief cause of a trauma center's verification failure is the lack of adequate PIPS and event resolution. PIPS programs continuously evaluate trauma core measures through a concurrent assessment of the process and outcome of patient care by routine analysis achieved through Primary L1°, Secondary L2° and Tertiary L3° levels of review.
- Once an event is identified, L1° review takes place concurrently, is reported weekly in order to verify, validate and utilize a specific set of core measure or "drill down" questions.
- If the provider or system events requires further investigation, then it moves onto semi-monthly L2° with the Trauma Medical Director (TMD). This includes a thorough review of the EMR, individuals involved, and a timeline of events with the goal of prompt feedback and resolution.
- If resolution is not achieved then a L3° multidisciplinary peer review is conducted to include, peer assessment of the efficiency, safety, and efficacy of the trauma care with evidence based corrective actions.

OBJECTIVES:

- Our ACS verified trauma center sought to streamline L1° and L2° review by ensuring consistent and reproducible drill down questions when validating trauma PIPS events.
- We proposed that certain events could be closed at L1° based upon impact/degree of harm or successful corrective actions and event resolution.
- We projected that this lean and reliable L1° would decrease the number of open events brought to L2°.
- We proposed that succinct and inclusive presentation of each event would decrease the need for additional data requested by the TMD at L2° and allow for prompt event resolution.
- We desired to successfully implement a process to stratify the degree of harm which would guide consistent triage of events to L3°.

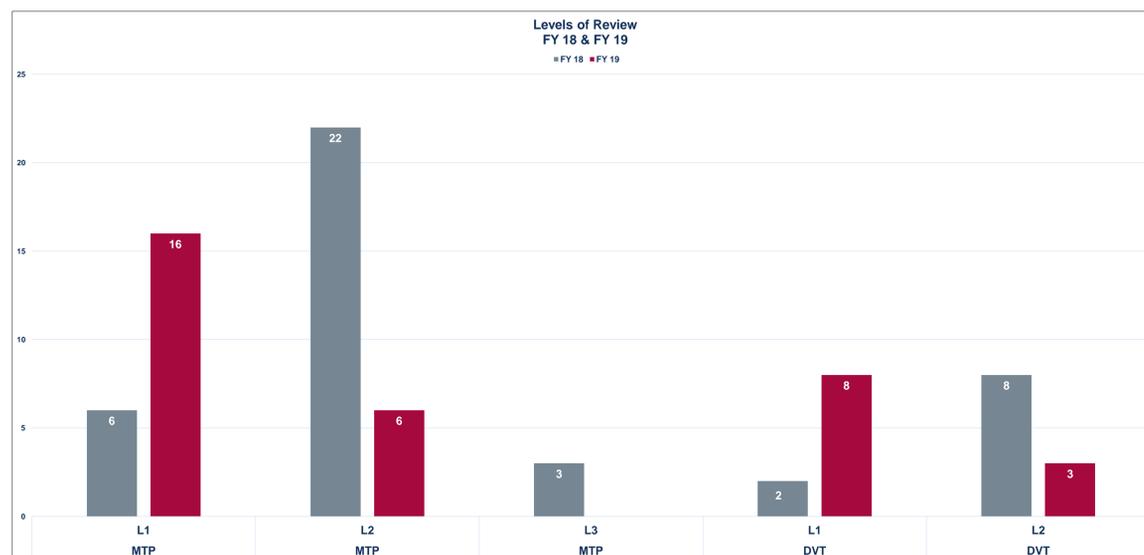
PROJECT DESIGN:

- Experienced clinical staff who are new to PIPS roles or TMD roles require systematic orientation to PIPS concepts as outlined in the ACS Orange Book and STN TOPIC®.
- This requires time, training, and tools to effectively integrate into efficacious and concurrent practice which methodically removes waste and reduces variation.
- Our team collaborated to consolidate evidence based information (NTDB, TQIP, and EAST) and garnered input from subject matter experts which resulted in development of an event specific drill down reference document.
- Questions and metrics were formulated from literature and through successive surveillance at the TMD led L2°. Previously, time was taken during L2° to look up additional data test results, call providers for their event recollection and compose emails to elicit additional evidence. This prolonged the L2° meeting and necessitated tabling events to the next L2° resulting in delays, motion waste and potential for events to fall off our radar



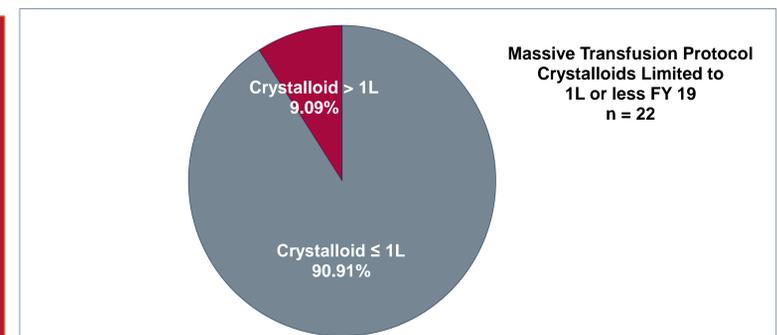
By utilizing our drill down tool and L1° review the clinical staff were able to capture, review, and close more MTP and DVT event reviews in L1° for FY19 as compared to FY18.

Complication	1° or 2° Review	Definition (NTDB, etc.)	HARD STOP Automatic Secondary Review	Classification/Stratification	Review Questions	Review Questions	Review Questions
Deep Vein Thrombosis	1 or 2	The formation, development, or existence of a blood clot or thrombus within the vascular system, which may be coupled with inflammation. The patient must be treated with anticoagulation therapy and/or placement of a vena cava filter or clipping of the vena cava. A diagnosis of DVT must be documented in the patient's medical record. This diagnosis may be confirmed by a venogram, ultrasound, or CT, and must have occurred during the patient's initial stay at your hospital. Confirmed by: 1. Doppler 2. Duplex u Itrasound 3. Venogram 4. IPG (impedance plyphthmography) 5. Autopsy. *Thrombus in the saphenous vein or any other superficial venous thrombus is not counted unless it also involves the deep venous system.	Did Pt receive chemoprophylaxis if not contraindicated according to CPG? (ordered, dispensed, administered?)	Minimal: incidental finding, involves peripheral venous system. Moderate: involves peripheral or central venous system. Symptomatic: mild swelling, heat, pain, Homer's sign Severe: Severe swelling, cyanosis, and/or pallor of the extremity.	Were SCD's in place if not contraindicated?	Was chemoprophylaxis initiated/reinitiated s/p OR if not contraindicated?	If DVT developed, was it appropriately treated?
Massive Transfusion Protocol	1 or 2	Triggers for Massive Transfusion Protocol (Initiate MTP if 2 or more triggers are present) <ul style="list-style-type: none"> <input type="checkbox"/> Penetrating Thoracoabdominal Trauma <input type="checkbox"/> HR >120 <input type="checkbox"/> SBP <90 <input type="checkbox"/> POC INR ≥ 1.5 <input type="checkbox"/> +FAST <input type="checkbox"/> Hgb <11 <input type="checkbox"/> BE ≥ -6 <input type="checkbox"/> Major Amputation 	Received more than 1 L of crystalloid.	Minimal: Balanced or TEG based resuscitation with resolved acidosis w/in 4 hours. Moderate: Balanced or TEG based resuscitation with sustained acidosis for > 4 hours Severe: Did not receive balanced or TEG based resuscitation resulting in unimproved labs, acidosis, and/or worsening acidosis.	Pt arrival time. MTP activation time, activated by. Activation Criteria met?	FAST results? Was resuscitation TEG based?	Blood ratios: 1st 8 hours & 1st 24 hours?



This process change has shown that the clinical staff were able to determine a level of closure on a majority of cases at L1° thus requiring less cases needing to be reviewed at L2° and L3°

Following implementation of this drill down tool it aided in the need to track crystalloid utilization in our initial trauma resuscitation. Our goal was to avoid over resuscitation of fluids and reinforce early initiation of blood products. This graph depicts our progression from not capturing this data in FY18 to increasing capture as well as compliance with limitation of crystalloid in FY19.



CONCLUSIONS:

- The result of defining drill down questions was a comprehensive list of core measures available in a spreadsheet which includes: complications/audit filters/clinical practice guidelines compliance which could be closed at L1° or L2°, NTDB/institution specific definitions with stratification of minimal, moderate, or severe degree of harm were included.
- Information was gathered concurrently from trauma service rounds, EMR, EMS data, referring facilities, or provider discussions at morning handoff report. Information is entered in the trauma registry PIPS module.
- This refined tool increased confidence and decreased the trauma staffs' learning curve while streamlining analysis and resolution of events and ensuring validity and inter-rater reliability.
- This drilldown tool continues to evolve as more Trauma PIPS event needs are identified and level of harm defined.
- Clinical staff increased their review of more audit filters and events with resolution at L1° review, resulting in fewer unnecessary events requiring L2° review resulting in a leaner process.

REFERENCES:

- Society of Trauma Nurses, Trauma Outcomes and Performance Improvement Course: TOPIC® <https://www.traumanurses.org/resources/documents/education/topic/TOPIC-Manual.PDF>
- ACS STN Optimal Trauma Performance Improvement Plan <https://reports.nsqip.facs.org/nsqippublicdocs/service?pubid=2018confres&docid>
- SME consultation discussions with Jenkins, Donald, Cribari, Chris, Martin, Kathleen
- ACS COT Performance Improvement How-To Manual 2002 <https://web4.facs.org/ebusiness/ProductCatalog/product.aspx?ID=111>
- NTDS Data Dictionary, <https://www.facs.org/quality-programs/trauma/tqi/center-programs/ntdb/ntds/data-dictionary>
- ACS TQIP Guidelines, <https://www.facs.org/quality-programs/trauma/tqi/center-programs/tqip/best-practice>

