TRAUMA PERFORMANCE IMPROVEMENT
UAMS TRAUMA PROGRAM
UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES
2021

I. Philosophy of the Trauma Program

The University of Arkansas for Medical Sciences (UAMS) is Arkansas's only academic health center. It also serves as the only ACS Verified and Arkansas designated Adult Level I Trauma Center. It has a tri-fold mission of education, patient-family centered healthcare and advancing knowledge through research to impact the care of patients.

To accomplish these goals, UAMS requires strong leadership with authority to coordinate the inter-professional team for patient care, to coordinate injury prevention programs and to direct research activities which will impact the future direction of adult trauma care in the country.

Trauma Clinical Care is under the direction of Dr. Ron Robertson, M.D., Professor and Chairman UAMS, Department of Surgery and Director of the Surgical Service Line. The UAMS Division of Acute Care Surgery research team is committed to the alleviation of suffering. We support a triple aimed research program focusing on clinical, translational and molecular research which includes trauma as well as emergency general surgery and surgical critical care. We believe successful science requires collaboration between researchers and a multitude of inter-professional health care providers.

II. Mission and Vision of the Trauma Performance Improvement Plan

A. The Trauma Program at UAMS is committed to quality patient care, performance improvement and patient safety, outreach and prevention programs, continuing education, and research.
B. The Trauma Program ensures the maintenance of a formal, validated, internal performance improvement process that allows for a multidisciplinary approach for rapid problem identification, data driven analysis, and resolution of issues within the quality framework of our institution.
C. Our mission is to deliver high quality of care through evidence- based, state-of-the-art medical practice driven by a performance improvement process and facilitated by examination of data and peer review at all levels of patient care delivery.
D. In 2012, UAMS became part of the American College of Surgeons Trauma Quality Improvement Program (ACS TQIP). By utilizing ACS TQIP, UAMS is elevating the quality of care currently being delivered by members of the inter-professional team through the use of risk adjusted benchmarking based upon national comparisons.

III. Authority and Scope

As the only ACS Verified and State Designated Level 1 Adult Trauma Center, UAMS Medical Center provides 24–hour tertiary care to adult trauma patients. An adult trauma

patient is defined as any patient over the age of 15 years sustaining an injury and requiring admission to UAMS. The University of Arkansas Board of Trustees and UAMS Medical Staff strongly support this verification/designation by documented resolution which is reaffirmed every three years.

The Trauma Program Medical Director (TMD) is responsible for the oversight and authority of the trauma center's trauma care, credentialing of trauma surgeons and participating liaisons, trauma registry, injury prevention, and outreach education. The TMD has the authority for the trauma performance improvement and patient safety plan development, implementation, and evaluation of the trauma program's outcomes in collaboration with the Trauma Program Director.

Key responsibilities include:

- Provides the authority and oversight for the trauma center through all phases of trauma care
- Establishes evidence-based guidelines and compliance with national standards of care
- Chairs the Trauma Multidisciplinary Peer Review and Operational Steering Committee
- Reports the statistical performance, trauma performance improvement, and patient safety outcomes annually to the UAMS Medical Executive Committee
- Serves on the monthly UAMS Adverse Event Evaluation and Management Committee

IV. Credentialing

All physicians who participate in the care of injured patients will be credentialed according to the Medical Staff Bylaws. The TMD has the authority to set additional criteria, and to recommend changes to the trauma call panel based on performance review.

Reappointment to the trauma admitting/consulting staff must be coordinated by the TMD in association with the liaison from neurosurgery, orthopaedic surgery, emergency medicine, radiology, anesthesia, critical care, and other appropriate disciplines. Re-appointment will be based on the following criteria:

- Maintenance of good standing in the primary specialty
- Evidence of compliance with divisional protocols and/or guidelines
- Documentation of attendance at multidisciplinary conferences
- Satisfactory performance in managing trauma patients based on annual OPPE
- All certifications must be maintained on a continuous basis
- All members of the Acute Care Surgery team must maintain at least provider level Advanced Trauma Life Support (ATLS) certification
- The Trauma Program Director, in collaboration with the Nursing Directors, is responsible for overseeing the credentialing and continuing education of nurses working with trauma patients, including Trauma Nursing Core Course (TNCC) and trauma specific continuing education developed by the Trauma Program

V. Trauma Patient Monitoring Process

A. Trauma Patient Population Criteria

The Trauma Program at University of Arkansas for Medical Sciences has adopted the Arkansas Trauma Registry Inclusion Criteria. All patients meeting the following inclusion criteria are included in the trauma registry. The Arkansas Trauma Registry Inclusion criteria includes:

At least one of the following injury diagnostic codes defined in the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM): S00-S99 with 7th character modifiers of A, B, or C only (injuries to specific body parts-initial encounter)

- T07 (unspecified multiple injuries)
- T14 (injury of unspecified body region)
- T20-T28 with 7th character modifier of A only (burns by specific body parts – initial encounter)
- T30-T32 (burn TBSA percentages)
- T79.A1-T79.A9 with 7th character modifier of A only (Traumatic
- Compartment Syndrome-initial encounter)
- T59.811A-T59.814A (smoke inhalation)
- T7500XA-T750.1XA (lightning)
- T75.1XXA (drowning)
- T71.111A-T71.114A, T71.121A-T71.124A, T71.131A-T71.134A,
- T71.141A-T71.144A, T71.151A-T71.154A, T71.161A-T71.164A,
- T71.191A-T71.194A, T71.20XA-T71.21XA, T71.221A-T71.224A,
- T71.231A-T71.234A, T71.29XA, T71.9XXA (Asphyxiation)
- T75.4XXA (electrocution)
- W54.0XXA (dog bite)
- T63.001A (snakebite)

Excludes the following isolated injuries:

- S00 (Superficial injuries of the head)
- S10 (Superficial injuries of the neck)
- S20 (Superficial injuries of the thorax)
- S30 (Superficial injuries of the abdomen, pelvis, lower back and external genitals)
- S40 (Superficial injuries of the shoulder and upper arm)
- S50 (Superficial injuries of the elbow and forearm)
- S60 (Superficial injuries of the wrist, hand and fingers)
- S70 (Superficial injuries of the hip and thigh)
- S80 (Superficial injuries of the knee and lower leg)
- S90 (Superficial injuries of the ankle, foot and toes)

And must include one of the following in addition to the ICD-10-CM:

- Hospital Admission
- Patient transfer via EMS transport (including air ambulance) from one hospital to another hospital
- Death resulting from the traumatic injury (independent of hospital admission or hospital transfer status)
- Excludes planned readmits or admits via the clinic

Other System Inclusion Criteria:

- All full trauma team activations involving the utilization of a trauma surgeon
- Any admission post ED/hospital discharge that occurs as a result of missed injuries or delayed diagnosis
- Any acute care hospital to acute care hospital trauma transfer via EMS

Please note: The Arkansas Trauma Registry Inclusion Criteria and the National Trauma Data Bank Inclusion Criteria differ. Cases which do not meet the National Trauma Data Bank inclusion criteria will be excluded from the submission to the National Trauma Data Bank by marking it for exclusion in NTDS module of the V5 registry.

B. Patient Identification

Each business day, the Trauma Clinical Coordinators run a series of EPIC reports to identify trauma patients. This includes reviewing for transfers, admissions, and discharges through the ED; review of direct admissions; and review of patient discharges. The aforementioned Trauma Registry Criteria is used to determine if a case is applicable for the registry.

C. Data Collection

For each identified patient, a hand abstraction tool is initiated. Data collection includes all NTDB data elements, ATR data elements, and selected UAMS data elements. Collection of data is guided by the NTDB data dictionary with supplements from the ATR data dictionary and UAMS data dictionary. Additionally, the concurrent data abstraction includes our first level of PI review.

The Trauma Registry Abstract form is designed to collect required registry information, serve as a PI screening tool and provide space to record essential clinical information for clinical case management purposes. Data sources for collection of this information include:

- Electronic Medical Record (EPIC) which includes physician notes, nursing notes, allied health notes, lab results, and radiologic reports
- Pre-hospital EMS Record
- Referring Hospital Medical Record
- Medical Examiner Reports
- Clinical rounds

Upon discharge, the Trauma Clinical Coordinators will ensure completion and accuracy of abstracted data and PI information prior to handing the abstract tool off to the Trauma Registrars.

D. Data Entry and Validation:

Based on a patient list collated by the Trauma Clinical Coordinators, the Trauma Registrars create a unique Trauma Registry number in our DI V5 Registry. The first page of the registry is completed, including: where the patient arrived from, date/time of arrival, patient name/MR #, and Trauma Band number. Data additions to the registry prior to patient discharge will include some PI documentation as needed.

Post discharge, the trauma registrars prep charts for data entry and completion of PI. This process includes sorting charts into site verification category (SVC), PIPS cases and non-PIPS/non-SVC categories. Based on category, the chart is placed into a colored folder specific to the SVC category, and then it is located into the appropriate work-cue for completion in the registry. Priority processing is based on the presence of identified PI issues, classification as a site survey category chart, and non PI/non-SVC categories respectfully.

The Trauma Registrars complete data entry, diagnosis coding to the most specific AIS code, ICD10 procedure coding, and initial documentation of all identified issues into Outcomes. Through this process, any identified data validation issues are corrected through collaboration with other team members. Documentation of any discrepancies is included in the Memo section of the corresponding Registry tab which will be discussed further in the validation plan. The first closure of the record will include both TQIP and V5 registry validation checks. This will occur no later than 60 days post discharge but with a goal of completion within 1 week of discharge.

At the close of a discharge month, the Trauma Registrars will complete a series of trauma registry reports which will be utilized to glean data for abstraction/keying errors.

UAMS participates in annual state validation performed by Qsource. This validation provides facility and state level inter-rater reliability reports. In addition, as census volume allows, 10% of the program's high risk (ISS > 9) patient records are re-abstracted to establish levels of inter-rater reliability both with the Clinical Coordinator and Trauma Registrars.

Once registry entry is completed, non-PIPS/non-SVC cases will be filed by Trauma Registry Number/date. All other charts will be placed in the Trauma Performance Improvement Coordinator (TPIC) work-cue for review and completion in our Trauma Outcomes. The TPIC or the Trauma Program Director will review all site verification charts, validate identified PIPS issues, and

document the PI process. This process will be further defined under the process for Monitoring Compliance.

E. Monitoring Compliance

The PIPS plan is designed to provide an ongoing, comprehensive and systematic structure for monitoring the quality and appropriateness of multidisciplinary patient care of the injured patient. This process requires concurrent issue identification, validation, and documentation by the Trauma Clinical Coordinators. The monitoring and evaluation of patient care is based upon the following:

1. **Standards of Quality Care:**
   All trauma patients that meet criteria for entry into the trauma registry are monitored for deviations in care, occurrences, or adverse events according to standards of quality trauma care as defined by regional, state, and national standards. UAMS maintains Clinical Practice Management Guidelines (CPMGs) to provide a framework standardization of practice at UAMS. These are available at https://surgery.uams.edu/divisions/trauma/guidelines/

2. **Death Review:**
   Trauma patient deaths are reviewed as they relate to trauma care and trauma system issues. This includes a review of hospice discharges.

3. **Audit Filters/Complications:**
   All Audit Filters/Complications as defined by: The American College of Surgeons, National Trauma Databank Standards, Arkansas Trauma System Clinical Practice Management Guidelines, and the UAMS Trauma Program custom filters are monitored. All audit filter/complications are reported to the Trauma Peer Review committee quarterly.

F. Levels of Review

1. **Primary Level Review**: The Trauma Clinical Coordinators provide concurrent issue identification, validation, and documentation of all issues during data abstraction. This is accomplished through participating in daily trauma rounds, reviewing the medical record and other communication with the interdisciplinary team (hallway conversations, submissions to PI email, etc.). Each trauma patient record is screened daily for variations from the standard of care or events. Events identified are validated by documentation in the medical record.

   The issues will be evaluated for determination of the level of intervention necessary and the impact of the event. Examples of categories of events which could be addressed at the primary review level:

- Issues with minimal impact to the trauma system or patient
- Documentation issues without adverse patient harm
- Timeliness of response of surgeons and consultants
- Prehospital issues without evidence of patient harm
- Activation level discrepancies
- Admission to a non-surgical service
- Missed injuries
- Outside hospital issues related to timeliness of transfer
- Specific PI filters which have exceptions to inclusion noted in their description
- Specific clinical complications which are monitored for frequency within the PI plan (e.g. CLABSI, VAP, CAUTI)

During this level of review immediate resolution and feedback may occur. Any issues identified which meet the above criteria may be referred to the TMD or his/her designee for evaluation at the secondary review level if the Trauma Program Director or Trauma PI Coordinator feels that further evaluation and review is warranted.

2. **Secondary Level Review:** All variances to the standard of care or provider or systems issues are validated, documented and prepared for secondary level of review with the TMD. The TMD defines the cause and preventative action for each identified issue. The TMD may define action plans, refer to specialty liaisons/departmental committees, or refer to the Trauma/EGS Peer Review Committee or Trauma Multidisciplinary Peer Review Committee. All issues not addressed in the primary review will go for secondary review. The Trauma Program Director is responsible for the follow up activities of this meeting. When the TMD was the physician of record for the case, the case will be referred to another faculty member for review of the case. Issues may be closed in Secondary Review or referred for Tertiary Review.

   The Trauma PI Coordinator/Trauma Program Director will prepare these charts in the following manner.

   a. Create a Secondary Review Form, including:
      - Listing applicable tracked complications, deviations from CPMG, identified audit filters and other identified concerns
      - Completed second page of the Secondary Review form with the calculated ISS, TRISS and injury list
      - Case narrative

   b. Compile a case file for review, including:
      - Completed abstract form
      - History and Physical Examination
      - Discharge Summary

- Operative reports
- EMS run report
- Face sheet
- Any other applicable documents to highlight the concerns noted in the secondary review form

3. **Tertiary Level Review:** All Mortalities, Sentinel Events, Provider Errors and deviations in standards of care will be referred for Tertiary Review.

   Tertiary Review may occur in one of the following forums:
   a. Trauma Multidisciplinary Peer Review Committee:
      - Meets: 3rd Friday of every month at 0600
      - Membership: This committee includes the trauma surgeons, Trauma APRNs, and the liaisons from neurosurgery, orthopaedic surgery, emergency medicine, radiology, anesthesiology, and critical care.
   b. Trauma/EGS Peer Review Committee:
      - Meets: Thursdays at 1600
      - Membership: This committee includes the trauma surgeons, APRNs, clinical nurses, and nurses from the Trauma Program Office.
   c. Department of Surgery M&M
      - Meets: Tuesdays at 0700
      - Membership: All surgical staff, residents and students as well as mid-level providers
   d. Multi-specialty M&M:
      - Meets: Quarterly
      - Membership: This committee includes representatives from specialties involved in the cases which are presented.
   e. Surgical sub-specialty departmental M&M
      - Meets: Monthly
      - Membership: These committees include faculty from specialty departments

   All unanticipated Mortalities will be presented at Trauma Multi-disciplinary Peer Review

   These conferences are considered peer review protected and are part of the performance review process of the trauma program. A summary of the discussion of individual cases presented in these forums will be included in the PI chart for the individual case.

4. **Quaternary Level of Review:** This level of review can occur based on a referral from the Trauma Program. Medical review by our hospital's Adverse Events Committee, or an external peer review is considered quaternary level of review. These groups can include:

- Medical Executive Committee
- External Review
- Central Arkansas Trauma Regional Advisory Council (CATRAC) PI Committee
- State Trauma Regional Advisory Council PI Committee

G. **Determination of Judgments**

The committee will render a judgment regarding the appropriateness of the issue on every mortality being reviewed. Each issue will be assessed a preventability status, standard of practice, note opportunities for improvement, and a coordinated plan.

1. **Classification system**
   - **a.** Mortality
     i. Unanticipated Mortality with Opportunity for Improvement (UM): Anatomic injury or combination of injuries considered survivable. Includes standard protocols not followed with unfavorable consequences and/or inappropriate provider care with unfavorable consequences

     ii. Unanticipated Mortality with Undetermined Opportunity for Improvement (UDM): Anatomic injury or combination of injuries considered survivable. Standard protocols were followed and provision of care deemed appropriate

     iii. Anticipated Mortality with Opportunity for Improvement (AM): Anatomic injury or combination of injuries considered severe but survivable under optimal conditions. Standard protocols are not followed, possibly resulting in unfavorable consequences and/or provider related care considered sub-optimal, possibly resulting in unfavorable consequences

     iv. Mortality without Opportunity for Improvement (M): Anatomic injury or combination of injuries considered non-survivable with optimal care. Standard protocols followed or if not followed, did not result in unfavorable consequence and/or provider related care appropriate or if sub-optimal, did not result in unfavorable consequences

   - b. Morbidity:
     i. Inappropriate Care with OFI:
     Can Include:
       - Complication related to deviation from standard protocol
       - Complication resulting from provider error
       - Complication related to error in judgment

- Complication related to equipment malfunction

ii. Appropriate Care with OFI:
Can Include:
- Complication indirectly related to deviation from standard protocol
- Operator error or error in judgment
- Provider related care considered suboptimal indirectly resulting in unfavorable outcome

iii. Appropriate Care without OFI
Can Include:
- Complication occurred despite adherence to a reasonable standard protocol
- Complication occurred despite appropriate care and good judgment

H. Corrective Action & Loop Closure Plan

The TMD and Trauma Service Director oversee all corrective action planning and loop closure.

Loop closure is defined as the mechanism of determining that a specific PI issue has been successfully addressed. Recommendations for re-evaluation and loop closure may be defined in the review forum. Ideally this is the result of evaluation of the issue, targeted intervention, and reevaluation to assure the intervention has successfully prevented additional occurrences of the original issue. Options for successful loop closure include based on the action plan:

Examples of potential corrective action/loop closure categories are:

- No Further Action Required – the concern was determined not to be significant or warrant further action
- Trend – the concern is included in an existing PI filter or will be added to a list of monitored events to determine frequency and recurrence with a specific timeline for re-evaluation to include Trending Providers/Issues/Monitor via Quarterly Reports
- Targeted Education – a specific educational intervention will be made either with the individual or the service to reduce the likelihood of the same error occurring again in the future. This may be done at any of the routine conferences, journal club, individually with the provider, or as a result of the discussion in a tertiary review
- Policy/Guideline Development/Revision – the specific issue requires a new policy or a further clarification or amendment to an existing policy to resolve the described issue
- Focused Audit of Identified Trend – in circumstances where a series or pattern of similar issues are identified the individual case can be referred to a focused

audit with the group of similar cases. The purpose is to evaluate for trends or patterns and develop an appropriate PI plan for the group of issues. This will result in a separate PI file for the group of cases and the PI solution

- Focused Corrective Action Plan – The issue reviewed has identified a resource, communication, or facility issue that requires a workgroup to determine an appropriate intervention. The workgroup, assigned by the TMD, will evaluate the specific issue and make a formal report in the form of a Focused Corrective Action and Implementation Plan to institute the appropriate changes and track their implementation.
- Individual Counseling – an individual conference between the TMD and/or specialty liaison and a provider to address the specific care, behavioral, or other issue identified. A summary of the discussion will be included in the provider file and the issue will be tracked through the provider file.
- Peer Review Presentation – any issue which warrants further input from the providers involved, has a substantial system issues, or has illustrative value to other providers may be sent to either General Surgery, Specialty Specific or Trauma Program Peer Review.
- Internal Referral or Call Panel Change – a pattern of provider specific events has been identified and warrants formal investigation or further action within the credentialing process. This may necessitate a change in the provider's participation in the call panel.
- Outside Referral – the issue has involvement of other facilities and necessitates feedback to that facility or a request for additional information. A letter will be sent to the facility.
- TRAC Referral – The issue identified involves multiple facilities or services within the TRAC and the issue would be best adjudicated at the TRAC level. Formal report to the Central Arkansas Trauma Regional Advisory Council Performance Improvement Committee will be made.
- ADH Referral - The issue involves multiple TRACS or is relevant to all facilities in the state and referral will be made to the ADH Trauma Advisory Council Performance Improvement Committee.

A PI issue will not be considered to be closed until the re-evaluation process demonstrates a measure of performance or change at an acceptable level. "Acceptable level" may be determined by benchmarking, evidence based data analysis, and/or decision by the Trauma Peer Review Committee.

Final Loop Closure can occur at any level. Loop closure can be approved by the Trauma Medical Director, Trauma Program Director or Trauma Performance Improvement Coordinator. Individual cases may be closed and further action may be determined after quarterly review and presentation to the Multidisciplinary Peer Review Committee.

I. Reporting and Integration into the Hospital Performance Improvement Process

UAMS submits data to the American College of Surgeons (ACS) NTDB each quarter. This report is utilized to compare outcomes and benchmark opportunities. Variances where the UAMS performance is below the national outcomes are targets for trauma and hospital performance improvement projects. This quarterly data is shared and discussed with the UAMS Chancellor, Executive Vice President and Dean, College of Medicine, Chief Executive Officer, Chief Medical Officer, and Chief Nursing Officer.

The statistical performance and trauma performance and patient safety outcomes are reported monthly through the Trauma Operational and Multidisciplinary Peer Review Committees.

Issues that are not able to be resolved requiring in depth root cause analysis may be referred to the Adverse Events Committee which has the TMD and an additional trauma faculty as members. Major issues or worrisome trends may also be referred to the Medical Executive Committee for review, recommendation and final resolution. The TMD is a member of the Medical Executive Committee and reports trauma specific outcomes annually.

Peer Review meeting minutes are forwarded to the Quality Experience and Safety Team (QUEST) Committee quarterly. This is a committee of the UAMS Medical Staff established to assist the Hospital Medical Board in overseeing the provision of safe and high quality patient experiences throughout the organization.

J. Confidentiality Protection

All performance improvement activities and related documents will be considered confidential and protected.
All documents that support the Trauma Performance Improvement and Patient Safety Plan are maintained in the Trauma Program office. The documents are filed and secured with limited, controlled access.
All performance improvement information will be labeled “Confidential quality improvement document. Unauthorized disclosure is prohibited pursuant to Arkansas Code Annotated 16-46-105”
All PI documents will be collected at the close of each peer review meeting.