ACS AMERICAN COLLEGE OF SURGEONS

Resources for Optimal Care of the Injured Patient

LEVEL IV TRAUMA CENTER 2026 STANDARDS

Released July 2026

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This publication is not intended to be a comprehensive guide to all services, personnel, and processes needed to conduct surgery. The guidance herein does not constitute a standard of care and is not intended to replace the medical judgment of the physician or healthcare professional in individual circumstances.

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Acknowledgements

The Committee on Trauma (COT) is thankful to the representatives of the COT member organizations and the members of the workgroup, who were vital to the completion of this standards manual. The COT is further grateful to all stakeholders who provided thoughtful and essential comments during multiple feedback periods. Those participating in the development of these standards and this edition of *Resources for Optimal Care of the Injured Patient Level IV Trauma Center Standards* are listed below.

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Background

About the American College of Surgeons
The American College of Surgeons (ACS) is a scientific and educational organization of surgeons that was founded in 1913 to raise the standards of surgical practice and improve the quality of care for all surgical patients. The ACS is dedicated to the ethical and competent practice of surgery. The contributions of the ACS have significantly influenced surgical care and have established the ACS as an important advocate for all surgical patients. The ACS has more than 82,000 members and is the largest organization of surgeons in the world.

ACS Quality Programs are developed according to a four-part framework used to evaluate and improve quality of care, consisting of (1) program-specific standards, (2) infrastructure needed for delivering high-quality, high-value care, (3) use of high-quality data, and (4) accreditation/verification to ensure proper implementation of components one through three. This model has shown to improve both care and outcomes in specialties such as cancer, trauma, and metabolic/bariatric surgery, in addition to other surgical disciplines.

About the Committee on Trauma
The Committee on Trauma (COT) was founded in 1922 by Charles L. Scudder, MD, FACS, and is the oldest standing committee of the American College of Surgeons. The COT focuses on a multidisciplinary approach to the care of the injured patient and recognizes that trauma is a surgical disease requiring surgical leadership. The mission of the COT is to develop and implement programs that support injury prevention and ensure optimal patient outcomes across the continuum of care. These programs incorporate advocacy, education, trauma center and trauma system development, best practice dissemination, outcome assessment, and performance improvement (PI).

Preface

Access to high-quality trauma care is often challenging in rural and remote regions, where timely evaluation and early intervention are critical to survival. In these settings, Level IV trauma centers frequently serve as the first—and sometimes only—point of access for patients with serious injuries. These facilities provide essential early interventions, initiate stabilization, and coordinate transfer to higher-level trauma centers when needed. With appropriate expertise and resources, Level IV centers may also offer opportunities for selected patients to receive definitive care closer to home. In fulfilling these roles, Level IV trauma centers are an integral component of the trauma system, and their expertise in injury care may also benefit patients with other time-sensitive, non-traumatic conditions.

The American College of Surgeons Committee on Trauma (ACS COT) has long recognized the importance of Level IV trauma centers. Standards for these facilities have been included in prior editions of *Resources for Optimal Care of the Injured Patient*, which establishes the requirements for trauma care within the ACS Verification, Review, and Consultation (VRC) Program. The decision to separate Level IV standards into a distinct document was made for two primary reasons. First, rural practice environments present unique challenges that differ substantially from those faced by Level I–III trauma centers. Second, the ACS COT VRC Program does not currently include a verification process for Level IV trauma centers.

These standards are intended to assist centers in identifying gaps and opportunities to enhance their ability to deliver optimal trauma care. They may also serve as guidance for trauma systems developing regional or state-level designation criteria. The standards are not intended to function as prescriptive checklists; rather, they provide a structured yet flexible framework to support the development of sustainable trauma care capacity tailored to local needs. Developed through a collaborative, stakeholder-informed process, these standards reflect a commitment to improving trauma care delivery in rural and remote communities while recognizing the unique operational realities of Level IV trauma centers.

Telehealth Capability

This edition introduces a standard addressing telehealth capability, reflecting the expanding role of virtual care in trauma system integration. For many Level IV trauma centers, telehealth provides a critical connection to expert consultation and clinical support during complex trauma cases.

Through secure, real-time audio, video, and data exchange, telehealth can enable:

- Consultation with trauma surgeons or other specialists during initial evaluation and resuscitation
- Clinical support for admitted patients, potentially increasing the likelihood that care can be delivered within the patient's community
- Earlier transfer decision-making and improved communication with receiving trauma centers

By establishing telehealth as a formal standard, this manual affirms that virtual care is an essential component of contemporary trauma systems, particularly in rural and frontier settings. This addition underscores the ACS COT's ongoing commitment to advancing equitable access to high-quality trauma care—regardless of geography or point of injury.

Acronyms

Acronyms used throughout this document are defined below for reference and clarity. The terminology reflects commonly used language in trauma care, education, and verification processes.

ABMS—American Board of Medical Specialties
ACEP—American College of Emergency Physicians
ACS—American College of Surgeons
AOA—American Osteopathic Association
APP—advanced practice provider
ATCN—Advanced Trauma Care for Nurses
ATLS—Advanced Trauma Life Support
BiPAP—bilevel positive airway pressure
CCHP—Center for Connected Health Policy
CE—continuing education
CME—continuing medical education
CPAP—continuous positive airway pressure
CRNA—certified registered nurse anesthetist
CT—computed tomography
DIED—died in emergency department
DOA—dead on arrival
ECG—electrocardiogram
ED—emergency department
EMS—emergency medical services
GCS—Glasgow Coma Scale
HIPAA—Health Insurance Portability and Accountability Act
IPCR—injury prevention coordinator
LMA—laryngeal mask airway
NTDS—National Trauma Data Standard
OPO—organ procurement organization
OT—occupational therapy
PACS—Picture Archiving and Communication System
PCAR—Pediatric Care After Resuscitation
PECC—pediatric emergency care coordinator
PI—performance improvement
PIPS—Performance Improvement and Patient Safety
PT—physical therapy
RCPS-C—Royal College of Physicians and Surgeons of Canada
RN—registered nurse
RTTDC—ACS Resource–Variable Trauma Team Development Course, formerly the ACS Rural Trauma Team Development Course
STEADI—Stopping Elderly Accidents, Deaths, and Injuries
STN—The Society of Trauma Nurses
TBI—traumatic brain injury
TCAR—Trauma Care After Resuscitation
TMD—trauma medical director
TNATC—Transport Nurse Advanced Trauma Course
TNCC—Trauma Nursing Core Course
TOPIC—Trauma Outcomes and Performance Improvement Course
TPM—trauma program manager

1

Institutional Administrative Commitment

Rationale

Full support and continuous commitment from institutional leadership is vital to achieving and maintaining trauma center verification. Resource allocation (such as equipment, personnel, and administrative support), a commitment to patient safety, and an enduring focus on continuous performance improvement (PI) are hallmarks of strong institutional administrative support that ensures compliance with standards and the highest quality of care for trauma patients.

1.1 Administrative Commitment

Definition and Requirements

In Level IV trauma centers, the institutional governing body and hospital leadership must demonstrate continuous commitment to the provision of the necessary human and physical resources to consistently deliver trauma care in compliance with the Level IV standards.

Additional Information

This standard fully encompasses staffing needs, physical structures, space allotments, and equipment needed for a trauma center to function optimally.

Measures of Compliance

Documentation that demonstrates compliance, including:

- Hospital Board of Directors' (or other administrative governing authority) approval of the establishment of the Level IV trauma center
- Commitment to ensuring that the necessary personnel, facilities, and equipment are made available to support adherence to the Level IV standards

Resources

None

References

None

2

Program Scope and Governance

Rationale

The trauma program and its medical staff provide the structures, processes, and personnel to comply with trauma center verification standards and ensure optimal care of the injured patient. This staff includes the program leadership who oversee the key functions of the trauma program. There must also be ongoing commitment from the trauma multidisciplinary Performance Improvement and Patient Safety (PIPS) committee.

2.1 State and Regional Involvement

Definition and Requirements

Level IV trauma centers must participate in the regional and/or statewide trauma system.

Additional Information

Examples of participation may include the following:

- Development and participation in state and regional transfer agreements with other centers
- Membership in state and/or regional trauma advisory committees
- Collaboration with regional trauma advisory committees, emergency medical services (EMS), or other agencies to promote the development of state and regional systems

Measures of Compliance

Documentation that demonstrates participation, such as meeting minutes

Resources

None

References

None

2.2 Disaster Management and Response

Definition and Requirements

A trauma program representative must participate in the hospital disaster/emergency management committee.

The trauma program must participate in at least one hospital drill or disaster plan activation per year that includes a trauma response and is designed to refine the hospital's response to mass casualty events.

Additional Information

Tabletop exercises and disaster plan activations due to actual natural or man-made emergency are acceptable for the two annual hospital drills. Hospital involvement in a regional disaster drill is sufficient.

Measures of Compliance

- Attendance records demonstrating program representative participation in disaster committee meetings
- Dates and nature of drills or activations during the reporting period

Resources

None

References

None

2.3 Governance Structure

Definition and Requirements

All trauma centers must have a governance structure that provides oversight of all aspects of trauma care within the organization. At minimum, this structure must allow for i) discussion and decisions pertaining to trauma program operations and ii) case review through a multidisciplinary lens. Within the governance structure, the committee responsible for trauma operational decisions must report to the senior leadership team.

Additional Information

The structure typically includes committees where discussions related to operations or multidisciplinary case reviews might occur. The operations committee should address the operational aspects of the program and is typically where protocols and policies are developed and data are shared and reviewed. This committee should have adequate representation of stakeholders responsible for care of the injured patient and is typically chaired by the trauma medical director (TMD) or trauma program manager (TPM). Multidisciplinary case reviews need not be a separate committee and may be combined with other quality of care committee(s) within the hospital.

Measures of Compliance

- Organizational chart and meeting minutes documenting the governance structure and reporting to senior leadership
- Description of how trauma program operations are managed, including processes for decision-making and multidisciplinary review
- Documentation of multidisciplinary case review processes

Resources

None

References

None

2.4 Trauma Medical Director

Definition and Requirements

In Level IV trauma centers, there must be a TMD who provides medical oversight of the trauma program. This physician must meet the following requirements:

- Be actively involved in the provision of trauma care at the facility, including initial stabilization, clinical decision-making, and oversight of transfer for injured patients
- Hold current Advanced Trauma Life Support® (ATLS®) certification
- Complete at least 24 hours of trauma-related continuing medical education (CME) per 3 years

The TMD must, at minimum, have the following authority and responsibilities:

a. Develop and enforce clinical protocols and practice management guidelines relevant to care of the injured patient
b. Ensure clinicians meet all requirements and adhere to institutional standards of practice related to trauma care
c. Work across departments and/or other administrative units to address opportunities for improvements in care
d. Work with nursing leadership to support the nursing needs of the injured patients
e. Oversee the structure and processes of the trauma PIPS program
f. Participate in committees relevant to the regional trauma system
g. Lead, with the TPM, discussions/decisions related to trauma operations
h. Lead discussions pertaining to trauma multidisciplinary case reviews
i. Determine clinician participation in trauma care, which might be guided by findings from the PIPS process or professional practice reviews

Additional Information

Trauma centers should provide the TMD with dedicated administrative and educational time, as well as program support, to ensure effective participation in trauma performance improvement, case review, committee functions, and ongoing professional education.

Measures of Compliance

- Responsibilities of the TMD
- Evidence of current ATLS® certification for the TMD
- CME documentation for the TMD

Resources

None

References

None

2.5 Trauma Program Manager

Definition and Requirements

In Level IV trauma centers, there must be a TPM who meets the following requirements:

- Have had clinical experience in the provision of acute care either as a nurse, APP, or prehospital care clinician
- Provide evidence of 24 hours of trauma-related continuing education (CE) per 3 years
- Have completed a course pertaining to trauma PI at least once or within 1 year of hire

The TPM must, at minimum, have the following authority and responsibilities:

a. Oversight of the trauma program with authority to organize services and systems necessary for optimal care of the injured patient
b. Coordinate day-to-day clinical process and performance improvement of nursing and allied health personnel
c. Assist with the budgetary process for the trauma program
d. Develop and implement clinical protocols and practice management guidelines in collaboration with the TMD
e. Provide educational opportunities for staff development in injury care
f. Monitor performance improvement activities
g. Serve as a liaison to administration and represent the trauma program on hospital and regional committees
h. Have oversight of the trauma registry

Additional Information

In some centers, the TPM may be referred to as trauma program coordinator, which is acceptable.

Ideally, the TPM is primarily employed at the center.

The TPM role is separate from that of the TMD but is designed to work alongside the TMD in the development of policies and oversight of the program.

Trauma centers should provide the TPM with dedicated administrative and educational time, as well as program support, to ensure active participation in trauma PI, committee functions, and ongoing professional education.

The TPM assumes day-to-day responsibility for process and PI activities as they relate to nursing and ancillary personnel involved in the care of trauma patients.

The TPM often cochairs (with the TMD) the committee where discussions/decisions occur related to trauma operations.

Examples of PI courses may include:

- Trauma Outcomes and Performance Improvement Course (TOPIC)
- Rural TOPIC
- State-provided PI course

Measures of Compliance

- Roles and responsibilities of the TPM
- Evidence of completion of PI course
- Evidence of clinical experience in the provision of acute care
- CE certificates demonstrating 24 hours/3 years

Resources

None

References

The Society of Trauma Nurses Position Statement on Qualifications and Competencies for the Trauma Program Manager https://www.traumanurses.org/_resources/documents/resources/position-papers/2023-Qualifications-and-Competencies-for-the-Trauma-Program-Manager.pdf

2.6 Injury Prevention and Outreach

Definition and Requirements

Level IV trauma centers must engage in injury prevention activities that prioritize initiatives based on local injury mechanisms, identified using data from the trauma registry and local epidemiological data.

Additional Information

Examples of injury prevention initiatives include fall prevention, motor vehicle crash prevention, motorcycle and bicycle safety/helmet initiatives, pedestrian safety, or bleeding control.

Prevention initiatives are most effective when implemented through local, regional, or state partnerships, depending on available resources. Locally, this may involve collaboration with other hospital departments (e.g., physical therapy/occupational therapy, family medicine, emergency medicine, pediatrics, social work) or with outside community organizations. Collaboration can involve participation in existing prevention programs or the initiation of new efforts. At the regional and state levels, Level IV trauma centers can support prevention by participating in initiatives led by other trauma centers or regional/state public health agencies.

Measures of Compliance

- Trends from registry including graphs/tables highlighting most prevalent injury mechanisms
- Report of injury prevention activities

Resources

Safe States – Injury Prevention Inventory: A Compendium of Injury Prevention Strategies, Sample Measures & Resources
https://resources.safestates.org/publications/injury-prevention-inventory-a-compendium-of-injury-prevention-strategies-sample-measures-resources/

American Trauma Society – Injury Prevention Professionals Course
https://www.amtrauma.org/Web/Web/Education/Injury-Prevention-Professionals-Course.aspx

National Council on Aging – Evidence-Based Falls Prevention Programs
https://www.ncoa.org/article/evidence-based-falls-prevention-programs

Centers for Disease Control and Prevention – Stopping Elderly Accidents, Deaths & Injuries (STEADI)
https://www.cdc.gov/steadi/about/index.html

ACS Stop the Bleed
https://www.stopthebleed.org/

The Health Alliance for Violence Intervention – Hospital-Based Violence Intervention Programs
https://www.thehavi.org/what-is-an-hvippdf

References

None

3

Staffing, Facilities, and Equipment

Rationale

The trauma program must maintain and provide the required staffing, facilities, and equipment for the care of the injured patient.

3.1 Emergency Airway Management

Definition and Requirements

Level IV trauma centers must have a policy for emergency airway management that defines:

- Primarily responsible personnel
- The role of an anesthesia clinician (anesthesiologist and/or certified registered nurse anesthetist [CRNA]) if applicable
- Expected response times

Additional Information

None

Measures of Compliance

Policy for emergency airway management

Resources

None

References

None

3.2 Emergency Department Physicians

Definition and Requirements

Level IV trauma centers must have continuous (24/7/365) physician coverage in the emergency department (ED). Physicians providing this coverage must meet the following requirements:

- Emergency medicine physicians must be board certified or board eligible in emergency medicine and must have completed ATLS® at least once
- Other physicians must maintain current ATLS® certification

It is expected that physicians must be at the patient's bedside within 15 minutes of a request.

Additional Information

Board certification and board eligibility refers to certification or eligibility for certification by the American Board of Medical Specialties (ABMS), the American Osteopathic Association (AOA), or the Royal College of Physicians and Surgeons of Canada (RCPS-C).

Lifetime board certification meets the requirement for board certification or board eligibility.

Optimal care is provided by an on-site board-certified/board-eligible emergency medicine physician. In resource-limited settings without an emergency medicine physician, coverage may be provided by physicians without emergency medicine training.

There might be limited exceptions to the availability of physicians in rural centers. See References for additional details.

Measures of Compliance

Documentation that demonstrates compliance, including:

- Evidence of board certification or board eligibility (when applicable)
- Evidence of ATLS certification (for physicians with or without board certification/eligibility in emergency medicine)
- Call schedule for ED physician coverage

Resources

None

References

On-site physician requirements for emergency departments: https://policysearch.ama-assn.org/policyfinder/detail/on-site%20physician?uri=%2FAMADoc%2FHOD.xml-H-130.929.xml

3.3 Emergency Department Advanced Practice Providers

Definition and Requirements

In Level IV trauma centers APPs involved in the initial evaluation and resuscitation of trauma patients in the ED must have current ATLS® certification.

Additional Information

This standard is not applicable to the following:
- CRNAs
- CAAs
- Scribes

Measures of Compliance

- List of trauma/ED APPs
- Evidence of ATLS certification for each ED APP listed

Resources

None

References

American College of Emergency Physicians Policy Statement: Guidelines Regarding the Role of Physician Assistants and Nurse Practitioners in the Emergency Department. January 2026. https://www.acep.org/patient-care/policy-statements/guidelines-regarding-the-role-of-physician-assistants-and-nurse-practitioners-in-the-emergency-department

3.4 Emergency Department Equipment Resources

Definition and Requirements

In Level IV trauma centers, the emergency department must have equipment available to allow for initial resuscitation and monitoring of the critically injured patient. The equipment must include, at minimum, those listed in the Resources section. There must be a process to ensure the immediate availability of equipment and supplies.

Additional Information

The equipment and supplies must be located in close proximity to where care is provided. If there is a dedicated resuscitation area, then time-critical equipment and supplies should be located in that space.

Measures of Compliance

- Evidence of availability of listed equipment and supplies
- Documentation of the process that ensures the immediate availability of equipment and supplies

Resources

Minimal Equipment list:

Airway Management
- Portable suction capabilities
- Bag-valve-mask respirators with appropriately sized masks
- Portable oxygen tanks and an oxygen supply
- Oral and nasal airways
- Bag-valve-mask respirator (adult, pediatric, infant)
- Laryngoscopes with variety of blades
- Endotracheal tubes
- Rescue airway equipment (fiberoptic and/or video laryngoscope, laryngeal mask airway)
- Cricothyroidotomy instruments and supplies

Breathing Equipment
- Noninvasive ventilation system (e.g., BiPAP/CPAP)
- Thoracostomy instruments and supplies
- Closed-chest drainage device
- CO_2 detector to confirm intubation
- Mechanical ventilator

Circulatory Support
- Venipuncture and IV therapy supplies, including infusion pumps for medications and blood products
- Intraosseous needles and insertion equipment
- Tourniquet
- Pelvic compression device
- Monitoring
  - Continuous physiologic monitoring: blood pressure (noninvasive, automatic) heart rate, pulse oximetry
  - Electrocardiogram machine
- Thermal control
  - Blanket warmer
  - Fluid warmer
  - Warming devices (e.g., convection warming systems)
  - Hypothermia thermometer

Other
- Adult and pediatric "code carts," including appropriate medication charts
- Radiographic equipment
- Cervical collars

References

American College of Emergency Physicians Emergency Department Planning and Resource Guidelines. Revised April 2021. https://www.acep.org/siteassets/new-pdfs/policy-statements/emergency-department-planning-and-resource-guidelines.pdf
https://www.annemergmed.com/article/S0196-0644(08)00556-8/fulltext

3.5 Pediatric Readiness

Definition and Requirements

The emergency department (ED) within the trauma center must perform a Pediatric Readiness Assessment during the designation cycle and have a plan to identify any gaps. In addition, centers must ensure compliance with the following high-priority aspects of pediatric readiness:

1. Identify a pediatric emergency care coordinator (PECC)
2. Obtain a full set of vital signs on all injured children
3. Adopt a validated pediatric triage system to identify pediatric patients at risk for clinical deterioration
4. Assure a weight-/color-based portable pediatric resuscitation cart is immediately available in the ED
5. Develop and maintain i) policies for interfacility transfer of children and ii) decision support to guide the selection of the most appropriately staffed transport service
6. Develop and maintain clinical practice guidelines for common pediatric traumatic conditions, including the appropriate imaging of the injured child
7. Integrate pediatric care into performance improvement activities

Additional Information

"Pediatric readiness" refers to infrastructure, administration and coordination of care, personnel, pediatric-specific policies, equipment, and other resources that ensure the center is prepared to provide care to the injured child.

The PECC is an identified pediatric champion within the center. See resources for more information.

Measures of Compliance

- Pediatric Readiness Assessment Gap Report
- Plan to address gaps identified through the Pediatric Readiness Assessment
- Demonstrate current compliance with the high-priority aspects of pediatric readiness

Resources

Pediatric Readiness Assessment
https://www.pedsready.org/

National Pediatric Readiness Project – Checklist & Toolkit to Address Pediatric Readiness
https://emscimprovement.center/domains/pediatric-readiness-project/readiness-toolkit/

References

Remick, K, Jensen A, Joseph M, et. al. Pediatric Readiness in the Emergency Department: Policy Statement. *J Amer Coll Surg.* 2026; 242(3):p 723-731. Remick, K, Jensen A, Joseph M, et. al. Pediatric Readiness in the Emergency Department: Policy Statement. *Journal of the American College of Surgeons* 2026; 242(3):p 723-731. doi: 10.1097/XCS.0000000000001725

3.6 Emergency Surgical Capability

Definition and Requirements

Level IV trauma centers with emergency surgical capability must have a policy that defines:

1. The types of emergency operative trauma cases that may be performed based on the availability of local resources
2. The expectations for the availability of a staffed operating room

The general surgeon(s) who provides operative care must have completed the ACS Advanced Trauma Life Support (ATLS) course at least once.

Additional Information

Emergency surgical capability refers to the availability of an operating room, surgeons, nurses and/or advanced practice providers, and anesthesia clinicians who, working together, might allow for operative care of the injured patient.

It is not expected that all Level IV centers will have emergency surgical capability, but for those that do, outlining the possible range of operative trauma cases expedite decisions regarding interfacility transfer. Specific examples might include a damage control laparotomy prior to transfer or orthopedic trauma care (e.g., hip fracture).

Expectations for timely availability of a staffed operating room include the expected response times for surgeons, anesthesia services (anesthesiologists and/or CRNAs), and operating room nurses.

Measures of Compliance

- Policy regarding expectations for timely availability of a staffed operating room and the types of emergency operative trauma cases that might be safely undertaken at the center
- Evidence of ATLS completion

Resources

None

References

None

3.7 Inpatient Trauma Care

Definition and Requirements

In centers with the capability of providing inpatient care, the following policies and resources must be available:

1. A policy that defines the types of cases that can receive inpatient care at the trauma center given the resources available
2. A policy that outlines the medical coverage model with an expectation of continuous availability and:
   - Expected response times
   - Who is responsible for coverage after hours
   - A contingency plan for time-sensitive issues when the inpatient clinician is not in house
   - Expectations of the clinician providing inpatient coverage, which among others, should include proficiency in:
     - Pain and opioid management after trauma
     - Delirium and agitation management after trauma
     - Care of the older adult trauma patient
     - Venous thromboembolism prophylaxis in trauma patients
3. An identified trauma clinical lead who:
   - Is a physician or APP
   - Participates in trauma CME/CE corresponding to their scope of practice and patient population(s) served
   - Participates in the trauma PIPS program

Additional Information

It is not expected that all Level IV centers have the capability of providing inpatient trauma care. Inpatient capability refers to having access to inpatient beds and clinicians with the capacity to provide care. Inpatient care might be provided to patients admitted from the emergency department or repatriated closer to home following definitive trauma care at a higher-level trauma center.

"Continuously" is defined as 24/7/365 and implies there are no gaps in coverage.

The trauma clinical lead role may be combined with other trauma leadership roles.

Measures of Compliance

- Policy that meets criteria outlined in this standard
- Call schedules pertinent to the model of coverage
- Evidence of trauma-related CME/CE for the clinical lead
- Evidence of trauma clinical lead participation in trauma performance improvement/patient safety program

Resources

Trauma Care After Resuscitation – Education Programs
https://tcarprograms.visionem.org/

American College of Surgeons — Best Practices Guidelines: Screening and Intervention for Mental Health Disorders and Substance Use and Misuse in the Acute Trauma Patient. December 2022. https://www.facs.org/quality-programs/trauma/quality/best-practices-guidelines

References

None

3.8 Allied Health Services

Definition and Requirements

All Level IV trauma centers must have social work service available.

A Level IV trauma center with the capability of providing inpatient trauma care must also have occupational therapy and physical therapy services available.

Additional Information

The availability of required allied health services is defined by the trauma centers.

Social work staff are responsible for discharge planning, connecting patients and families to community resources, and supporting transitions of care. Social work may be provided by a social worker, registered nurse case manager, or discharge planner. Facilities may meet the social work requirement through onsite staff, telehealth services, or on-call coverage, depending on the facility's resources and patient volume.

Occupational and physical therapy services are intended to support inpatient recovery and safe discharge planning. In the limited resource environment, physical therapists may perform selected occupational therapy functions.

Measures of Compliance

Description of the model of coverage for each service

Resources

None

References

None

3.9 Blood Products

Definition and Requirements

Level IV trauma centers must have an adequate supply of blood products available. In centers where onsite storage is limited, centers must have a contingency plan in place.

Additional Information

An "adequate supply" of blood products is based on the clinical capabilities of the trauma center and the frequency of needing to care for severely injured patients, as well as the potential need to support patients prior to transfer.

A contingency plan might include prehospital transport of blood products, a walking blood bank, or other means of assuring access to blood products.

Measures of Compliance

- Policy for maintaining blood product capabilities
- Evidence that blood product administration was evaluated during the PIPS process

Resources

None

References

None

3.10 Medical Imaging

Definition and Requirements

In Level IV trauma centers, the following medical imaging services must be available 24 hours per day and be accessible for patient care within the time interval specified when clinically necessary:

- Conventional radiography – 30 minutes
- Computed tomography (CT) – 30 minutes

The centers must be able to share images through a picture archiving and communication system (PACS) with a potential receiving center to reduce redundant imaging.

Additional Information

"Accessible for patient care" implies that the necessary human and equipment resources are available within the time specified based on the clinical needs of the patient. The time interval refers to the time between an initial request and the initiation of the test/procedure, not the completion of the ordered test/procedure.

If there is adequate expertise, then point-of-care ultrasound should be made available as an adjunctive imaging modality.

The ability to send images does not imply that an interpretation of those images must be included.

Measures of Compliance

- Description of human resources and equipment availability
- Policies/clinical practice guidelines ensuring the availability of these imaging services and a process to transmit images prior to transfer of the patient to a higher level of care

Resources

None

References

None

3.11 Radiologist Access

Definition and Requirements

In Level IV trauma centers, radiologists must be continuously available for trauma imaging interpretation within 60 minutes of request, and they must be available to participate in performance improvement and quality assurance activities. To enable access and timely interpretation, the trauma center must make images available remotely to the radiologist.

Final radiology reports must accurately reflect communications to members of the trauma team, including changes between preliminary and final interpretations.

Additional Information

"Continuously" is defined as 24/7/365 and implies there are no gaps in coverage.

Radiologists do not need to be onsite and may interpret imaging studies remotely.

The time interval of 60 minutes is measured from time of request to time of interpretation.

Participation in PI and quality assurance (QA) activities may include remote review and response for PI cases. Attendance of the multidisciplinary case review meetings is not required.

Measures of Compliance

Radiology policy or guidelines:

- Report of time interval between request and interpretation
- Call schedules
- Evidence of radiologist participation in PI and QA activities
- Evaluated through case review

Resources

None

References

None

3.12 Laboratory Resources

Definition and Requirements

In Level IV trauma centers, the following laboratory services must be available:

- Standard analysis of blood, urine, and other body fluids
- Blood typing and cross-matching, if applicable
- Coagulation studies
- Blood gases and pH determinations
- Drug and alcohol testing

If the lab is not staffed in-house 24/7/365, there must be a call-back process for lab personnel for trauma activations such that they are onsite within 30 minutes.

Additional Information

Point-of-care may substitute for traditional laboratory processing of some tests.

Measures of Compliance

- Evidence of availability of equipment and supplies of the listed services
- Policies and procedures ensuring the continued immediate availability of resources

Resources

None

References

American College of Emergency Physicians Emergency Department Planning and Resource Guidelines. Revised April 2021. https://www.acep.org/siteassets/new-pdfs/ policy-statements/emergency-department-planning-and-resource-guidelines.pdf https://www.annemergmed.com/article/S0196-0644(08)00556-8/fulltext

3.13 Telehealth Capability

Definition and Requirements

Level IV trauma centers with telehealth capability must have:
- Adequate resources to conduct the initial evaluation and resuscitation of an injured patient with remote support.
- Guidelines that specify indications for use (e.g., initial resuscitation, virtual support for inpatient care, follow-up care) and protocols for how the equipment might be accessed
- Credentialing procedures for clinicians who provide remote support

Additional Information

This standard does not require telehealth be available at all Level IV trauma centers. It sets expectations for its use and support among those centers with telehealth capability.

Telehealth capability includes adequate facilities, protocols, staff education, and means of credentialing to ensure its appropriate use.

Adequate resources include:
- A secure internet connection
- Telehealth integrative software that is Health Insurance Portability and Accountability Act (HIPAA) compliant
- High-quality camera, microphone, and headphones
- Ability to share pertinent patient information, including imaging, laboratory, and other records
- Back-up system in case of technical difficulties and a support system for real-time troubleshooting
- Access to the relevant expertise where a specialist or other consultant is available to provide remote support

Measures of Compliance

- Description of telehealth resources (physical assets)
- Relevant hospital guidelines, policies, and protocols including credentialing

Resources

Center for Connected Health Policy – Tool to Find Telehealth Policies Related to Reimbursement in Each State
https://www.cchpca.org/

References

Hashmi ZG, Park C, and the American College of Surgeons Committee on Trauma Teletrauma Spotlight Session Workgroup. Using Teletrauma to Improve Access to Trauma Care in the US: A Call for Action. *J Amer Coll Surg*. September 13, 2024. https://doi.org/10.1097/XCS.0000000000001210.

American College of Surgeons – Unlocking the Potential of Telehealth in Surgery: A Comprehensive Primer for Surgeons. March 2024. https://www.facs.org/media/os0i5fyd/unlocking-the-potential-of-telehealth-in-surgery-primer.pdf.

American College of Surgeons – Statement on the Standards and Importance of Telehealth in Surgical Practice
https://www.facs.org/about-acs/statements/importance-and-standards-of-telehealth-in-surgical-practice/

4

Patient Care: Expectations and Protocols

Rationale

The trauma program must utilize comprehensive clinical pathways and clinical practice guidelines that facilitate the standardization of patient care for the injured patient. This standardization improves the quality of care and enables the training of personnel.

4.1 Clinical Practice Guidelines

Definition and Requirements

All trauma centers must have evidence-based clinical practice guidelines, protocols, or algorithms that are reviewed at least every 3 years and take into consideration the local resources available.

Additional Information

Clinical practice guidelines, protocols, or algorithms should be developed or revised in response to new evidence or opportunities for improvement. They provide an opportunity to standardize practice, which facilitates training, allows for auditing of practices, and tends to improve the quality of care.

Guidelines should be practical and take into consideration the resources and expertise available at the trauma center.

Guidelines are most effective if they are readily available at the point of care.

High-priority guidelines for consideration include the following:

- Emergency airway management
- Emergent transfusion
- Anticoagulation reversal
- Imaging (adults and pediatric), including expectations for timely reporting, and communication of critical results
- Initial management of severe traumatic brain injury
- Initial management of orthopedic injuries to include at minimum open fractures, and hip and pelvic fractures
- Timely intervention for geriatric hip fractures
- Management of patients with rib fractures
- Geriatric trauma management
- Spine clearance
- Transfer guideline for mild or moderate traumatic brain injury

Measures of Compliance

Clinical practice guidelines, protocols, or algorithms with date of last revision within 3 years

Resources

Guidelines and best practices are available through the following (this list is not exhaustive):

Eastern Association for the Surgery of Trauma
https://www.east.org/education-resources/practice-management-guidelines

American College of Surgeons
https://www.facs.org/quality-programs/trauma/quality/best-practices-guidelines/

American Association for the Surgery of Trauma
https://www.aast.org/resources/guidelines

Western Trauma Association
https://www.westerntrauma.org/western-trauma-association-algorithms/

Brain Trauma Foundation
https://braintrauma.org/coma/guidelines-current

References

None

4.2 Trauma Activation Requirements

Definition and Requirements

In all Level IV trauma centers, the criteria for trauma activation must be clearly defined. At minimum, the following criteria must be included in the context of traumatic mechanism:

1. Confirmed blood pressure less than 90 mmHg at any time in adults and age-specific hypotension in children
2. Patients who have respiratory compromise, have been intubated in the field, or need an emergent airway
3. Penetrating injuries to the neck, chest, or abdomen
4. Glasgow Coma Scale (GCS) less than 9 (with mechanism attributed to trauma)
5. Emergency clinician's discretion

In Level IV trauma centers, the trauma team members responsible for responding to the trauma activation should be defined, and the team must be assembled within 30 minutes of the activation.

Level IV centers with surgical capabilities must define the criteria that will prompt a call to the surgeon (when available). The surgeon must be at bedside within 30 minutes of the request.

Additional Information

The trauma program may include additional criteria at their discretion, including those outlined in the National Guidelines for the Field Triage of Injured Patients referenced below.

A single level of activation may be sufficient for Level IV centers.

For centers with surgical capabilities, the criteria for when to notify a surgeon must be clearly defined.

Measures of Compliance

- List of criteria for trauma activation
- Policy for notifying the surgeon on call (if available)
- Documentation of time interval between activation and trauma team assembly and time interval between surgeon request and surgeon at bedside (if available)

Resources

American College of Surgeons National Guidelines for the Field Triage of Injured Patients
https://www.facs.org/quality-programs/trauma/systems/field-triage-guidelines/

References

None

4.3 Transfer Protocols

Definition and Requirements

Level IV trauma centers must have clearly defined transfer protocols that include the types of patients and the expected time frame for initiating or accepting a transfer, with predetermined referral centers for outgoing transfers.

When trauma patients are transferred, the transferring provider must directly communicate with the receiving facility to ensure safe transition of care. This communication must be documented and may occur through a transfer center.

Additional Information

Subsequent decisions regarding transfer to a facility within a managed care network should be made only after stabilization of the patient's condition and in accordance with the ACS Statement on Managed Care and the Trauma System. Considerations for transfer should be based solely on the needs of the patient, without consideration of their health plan or payer status.

Examples of communication documentation may include call logs, emails, and patient summary reports.

Measures of Compliance

- Transfer protocols
- Transfer communication documentation

Resources

American College of Surgeons – Statement on Managed Care and the Trauma System https://www.facs.org/about-acs/statements/21-managed-trauma

References

None

4.4 Organ and Tissue Procurement

Definition and Requirements

In Level IV trauma centers, there must be a plan in place to address the potential for organ and tissue procurement. This might be any of the following:

- An affiliation with an organ procurement organization (OPO)
- A written policy for notification of the regional OPO
- Transfer guidelines pertaining to patients who might meet criteria for solid organ procurement

Additional Information

This standard pertains to solid organ and/or tissue procurement from trauma patients only.

Measures of Compliance

Documentation that demonstrates compliance, including:

- OPO affiliation agreement
- Regional OPO notification policy
- Transfer guidelines

Resources

None

References

None

5

Data Surveillance and Systems

Rationale

High-quality data are critical to inform quality improvement and measure the performance of trauma programs. This is dependent on having well-trained registry personnel working closely with trauma leadership. High-quality data also allow for focused quality improvement activities and maximize the value of trauma benchmarking programs.

5.1 Patient Data Collection

Definition and Requirements

Level IV trauma centers must have a trauma registry with supporting personnel (either onsite or offsite), policies, and procedures including:

- A written data quality plan and demonstrated compliance with the plan. At minimum, the plan must require yearly review of data quality.
- At least one human resource must have participated in a trauma registry course that includes all of the following content:
  - Abstraction
  - Data management
  - Reports/report analysis
  - Data validation
  - HIPAA
- Requirement that trauma registry data be collected in compliance with the ACS National Trauma Data Standard (NTDS) inclusion criteria and data element definitions and at least 80% of records are closed within 60 days of the patient discharge date.

Additional Information

There must be sufficient personnel to achieve the expectation of 80% of records closed within 60 days of discharge.

Data collection might be automated or outsourced to offsite personnel with the expectation that i) data are readily available for local performance improvement, ii) the center has oversight on data quality, and iii) opportunities for data quality improvement are identified and actioned.

The data quality plan should allow for a continuous process that measures, monitors, identifies, and corrects data quality issues and ensures the fitness of data for use.

Measures of Compliance

- Evidence of certification from a trauma registry course that meets the requirements above
- Registry report demonstrating that data for 80% of patient records are closed within 60 days of discharge
- Evidence of data quality plan compliance and annual review

Resources

None

References

None

6

Performance Improvement and Patient Safety

Rationale

Processes for identifying adverse events and implementing subsequent corrective action plans—measurable through patient outcomes—are inherent cornerstones of continuous performance improvement and patient safety. Problem resolution, outcomes improvement, and assurances of patient safety ("loop closure") must be readily identifiable through structured performance improvement initiatives.

6.1 Performance Improvement and Patient Safety Plan

Definition and Requirements

Level IV trauma centers must have a written PIPS plan that:

- Outlines the organizational structure of the trauma PIPS process, with a clearly defined relationship to the hospital PI program.
- Specifies the processes for event identification. As an example, these events may be brought forth by a variety of sources, including but not limited to: individual personnel reporting, morning report or daily sign-outs, case abstraction, registry surveillance, use of clinical guideline variances, patient relations, or risk management. The scope for event review must extend from prehospital care to hospital discharge.
- Includes a list of audit filters, event review, and report review that must include, at minimum, those listed in the Resources section.
- Defines levels of review:
  - Primary: Trauma program manager (TPM) and/or PI nurses
  - Secondary: Trauma medical director (TMD)
  - Tertiary: Trauma multidisciplinary case review
  - Quaternary: System review
- Each of the above levels of review should clarify:
  - Which cases are to be reviewed
  - Who performs the review
  - When cases can be closed or must be advanced to the next level
- Defines the members and responsibilities of those participating in trauma multidisciplinary case reviews
- Specifies the frequency and attendance threshold for the trauma multidisciplinary case review meetings. At a minimum, the following attendance is expected:
  - 60% of meetings for the TMD
  - 60% of meetings for the inpatient trauma clinical lead
- Has an annual process for identification of priority areas for PI based on audit filters, event reviews, and benchmarking reports

Additional Information

Attendance requirements may be met by teleconference.

Trauma multidisciplinary case review meeting attendance may be waived for military deployment, medical leave, and missionary work.

Measures of Compliance

PIPS plan that meets the requirements outlined above

Resources

Audit filters, event or report reviews:

1. Delayed recognition of injuries or missed injuries
2. Delays or adverse events associated with prehospital trauma care
3. Compliance with trauma team activation protocols
4. Delays in care due to the unavailability of emergency department clinician
5. Transfers out of the facility for timeliness, appropriateness, and safety
6. Radiology interpretation errors or discrepancies between the preliminary and final reports
7. Delays in access to time-sensitive diagnostic or therapeutic interventions
8. Lack of availability of essential equipment for resuscitation or monitoring
9. Significant complications and adverse events
10. All deaths: inpatient, died in emergency department (DIED), dead on arrival (DOA)
11. Inadequate or delayed blood product availability
12. Adherence to clinical practice guidelines

References

None

6.2 Documented Effectiveness of the Performance Improvement and Patient Safety Program

Definition and Requirements

Level IV trauma centers must have documented evidence of event identification; effective use of audit filters; demonstrated loop closure; attempts at corrective actions; and strategies for sustained improvement measured over time.

Additional Information

None

Measures of Compliance

PIPS documentation includes peer review minutes, loop closure documentation, benchmarking reports, or other relevant data to inform and evaluate PI.

Resources

None

References

None

6.3 Clinician Participation in Prehospital Performance Improvement and Prehospital Care Feedback

Definition and Requirements

In Level IV trauma centers, a representative from the ED or trauma program must participate in the prehospital PI process relevant to the care of the trauma patients.

Level IV trauma centers must have a process for reviewing and providing feedback to EMS agencies regarding protocols, triage, and the provision of trauma care.

Additional Information

None

Measures of Compliance

- Attendance records from prehospital PI meetings
- Prehospital care protocols relevant to the care of trauma patients
- Evidence of communication (feedback) between trauma centers, EMS agencies, and referring providersperiods)

Resources

None

References

None

6.4 Process to Receive Feedback from Higher-Level Centers After Transfer

Definition and Requirements

Level IV trauma centers must have a process for requesting information on patients transferred out pertaining to:

- Injuries identified at the center providing definitive care
- Outcomes
- Potential opportunities for improvement in initial care

Additional Information

Information should be shared and potential opportunities for improvements in care should be incorporated into the center's PIPS program.

Measures of Compliance

- Description of the process for requesting feedback
- Evidence of incorporation of information into the PIPS program

Resources

None

References

None

7

Education: Professional and Community Outreach

Rationale

Education and outreach programs are integral parts of the trauma program and are designed to help improve outcomes from trauma and minimize the effects of injury. Trauma centers have an obligation to educate future providers and ensure that the public has an opportunity to access educational resources relevant to injury care.

7.1 Nursing Trauma Orientation and Education

Definition and Requirements

Level IV trauma centers must provide trauma orientation to new nursing staff caring for trauma patients.

Nurses must participate in trauma continuing education corresponding to their scope of practice and patient population(s) served.

Additional Information

Examples of orientation may include:
- Center-developed or locally developed educational program that integrates PIPS-identified issues
- Education specific to patient population(s) served

Nursing orientation may include simulation sessions, online learning, conferences, and annual training events.

Examples of nursing education may include:
- ATCN—Advanced Trauma Care for Nurses
- TNCC—Trauma Nursing Core Course
- PCAR – Pediatric Care After Resuscitation
- TCAR—Trauma Care After Resuscitation
- TNATC—Transport Nurse Advanced Trauma Course
- RTTDC® – ACS Resource–Variable Trauma Team Development Course, formerly the ACS Rural Trauma Team Development Course

Measures of Compliance

- Nursing orientation materials
- Continuing education certificates or transcripts

Resources

None

References

None

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