VRC VERIFICATION REVIEW CONSULTATION

for excellence in trauma centers

A QUALITY PROGRAM *of the* AMERICAN COLLEGE OF SURGEONS

Resources for Optimal Care of the **Injured Patient**

2022 Standards | **Released March 2022**

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Dedication

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William H. Marx, DO, FACS, was Professor of Surgery and Critical Care and Chief of the Division of Trauma and Acute Care Surgery at SUNY Upstate Medical University. He had a distinguished career in the US Army, rising to the rank of Lieutenant Colonel while serving on active duty from 1978 to 1989 and reserve duty from 1989 to 2001. He was deployed during Operation Desert Storm from 1991 to 1992.

Bill was an incredibly active member of the American College of Surgeons, serving on the Board of Governors and as Past-President of the New York Chapter. His engagement with the Committee on Trauma began in the Regional Committees, where he served as the New York State Chair followed by two terms as the Chief for Region 2. He began serving as a Verification, Review, and Consultation (VRC) Program reviewer in 2007 and was promoted to lead reviewer in 2012. Bill was appointed to the Central COT in 2014, where he made major contributions to the Quality Programs and served as Vice-Chair and Chair of the Verification Review Committee and as a member of the COT Executive Committee. As the VRC Chair, he took on a leading role and was instrumental in revising and developing the standards in this manual.

In addition to his work with the COT, Bill was a leader in the New York State trauma system. He served as Chair of the State Trauma Advisory Committee and was instrumental in the state's decision to adopt the ACS standards for trauma center verification.

We want to dedicate this work to Bill in recognition of his unwavering commitment to ensuring the optimal care for injured patients. All those who knew Bill appreciated his approach to building consensus while maintaining focus on the best interests of the injured patient. The trauma community has lost a servant leader, a mentor, and a friend, and his family has lost a wonderful husband and father.

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Table of Contents

Important Notice about the Use of This Document i

Confidentiality Requirements i

Acknowledgments ii

Background v

Foreword vi

Overview of the Verification, Review, and Consultation Program vii

1 Institutional Administrative Commitment 1

1.1 Administrative Commitment 3

1.2 Research Support 4

2 Program Scope and Governance 7

2.1 State and Regional Involvement 9

2.2 Hospital Regional Disaster Committee 10

2.3 Disaster Management Planning 11

2.4 Level I Adult Trauma Patient Volume Criteria 12

2.5 Level I Pediatric Trauma Patient Volume Criteria 13

2.6 Adult Trauma Centers Admitting Pediatric Patients 14

2.7 Trauma Multidisciplinary PIPS Committee 15

2.8 Trauma Medical Director Requirements 16

2.9 Trauma Medical Director Responsibility and Authority 17

2.10 Trauma Program Manager Requirements 18

2.11 Trauma Program Manager Reporting Structure 19

2.12 Injury Prevention Program 20

2.13 Organ Procurement Program 23

2.14 Child Life Program 24

3 Facilities and Equipment Resources **27**
3.1 Operating Room Availability 29
3.2 Additional Operating Room 30
3.3 Operating Room for Orthopaedic Trauma Care 31
3.4 Blood Products 32
3.5 Medical Imaging 33
3.6 Remote Access to Radiographic Imaging 34
3.7 Cerebral Monitoring Equipment 35
3.8 Cardiopulmonary Bypass Equipment 36

4 Personnel and Services **39**
4.1 Trauma Surgeon Requirements 41
4.2 Trauma Surgeon Coverage 42
4.3 Trauma Surgery Backup Call Schedule 43
4.4 Trauma Surgeon Presence in Operating Room 44
4.5 Specialty Liaisons to the Trauma Service 45
4.6 Emergency Department Director 46
4.7 Emergency Department Physician Requirements 47
4.8 Emergency Department Physician Coverage 48
4.9 Pediatric Critical Care Staffing 49
4.10 Neurotrauma Care 50
4.11 Orthopaedic Trauma Care 51
4.12 Specialized Orthopaedic Trauma Care 52
4.13 Anesthesia Services 53
4.14 Radiologist Access 54
4.15 Interventional Radiology Response for Hemorrhage Control 55
4.16 ICU Director 56
4.17 ICU Physician Coverage 57
4.18 Intensivist Staffing 58
4.19 ICU Provider Coverage for Level III Trauma Centers 59
4.20 ICU Nursing Staffing Requirement 60
4.21 Surgical Specialists Availability 61
4.22 Soft Tissue Coverage Expertise 62
4.23 Craniofacial Expertise 63
4.24 Replantation Services 64
4.25 Medical Specialists 65
4.26 Child Abuse (Nonaccidental Trauma) Physician 66
4.27 Allied Health Services 67
4.28 Renal Replacement Therapy Services 68
4.29 Advanced Practice Providers 69
4.30 Trauma Registry Staffing Requirements 70
4.31 Certified Abbreviated Injury Scale Specialist 71
4.32 Trauma Registry Courses 72
4.33 Trauma Registrar Continuing Education 73
4.34 Performance Improvement Staffing Requirements 74
4.35 Disaster Management and Emergency Preparedness Course 75

5 Patient Care: Expectations and Protocols **77**
5.1 Clinical Practice Guidelines 79
5.2 Trauma Surgeon and Emergency Medicine Physician Shared Responsibilities 80
5.3 Levels of Trauma Activation 81
5.4 Trauma Surgeon Response to Highest Level of Activation 82
5.5 Trauma Surgical Evaluation for Activations below the Highest Level 83
5.6 Care Protocols for the Injured Older Adult 84
5.7 Assessment of Children for Nonaccidental Trauma 85
5.8 Massive Transfusion Protocol 86
5.9 Anticoagulation Reversal Protocol 87
5.10 Pediatric Readiness 88
5.11 Emergency Airway Management 89
5.12 Transfer Protocols 90
5.13 Decision to Transfer 91
5.14 Transfer Communication 92
5.15 Trauma Diversion Protocol 93
5.16 Trauma Diversion Hours 94
5.17 Neurosurgeon Response 95
5.18 Neurotrauma Plan of Care for Level III Trauma Centers 96
5.19 Neurotrauma Contingency Plan 97
5.20 Treatment Guidelines for Orthopaedic Injuries 98
5.21 Orthopaedic Surgeon Response 99
5.22 Operating Room Scheduling Policy 100
5.23 Surgical Evaluation of ICU Patients 101
5.24 Trauma Surgeon Responsibility for ICU Patients 102
5.25 Communication of Critical Imaging Results 103
5.26 Timely CT Scan Reporting 104
5.27 Rehabilitation Services during Acute Phase of Care 105
5.28 Rehabilitation and Discharge Planning 106
5.29 Mental Health Screening 107
5.30 Alcohol Misuse Screening 108
5.31 Alcohol Misuse Intervention 109

6 Data Surveillance and Systems **111**
6.1 Data Quality Plan 113
6.2 Trauma Registry Patient Record Completion 114
6.3 Trauma Registry Data Collection and Submission 115

7 Performance Improvement and Patient Safety **117**
7.1 Trauma PIPS Program 119
7.2 PIPS Plan 120
7.3 Documented Effectiveness of the PIPS Program 121
7.4 Participation in Risk-Adjusted Benchmarking Programs 122
7.5 Physician Participation in Prehospital Performance Improvement 123
7.6 Trauma Multidisciplinary PIPS Committee Attendance 124
7.7 Trauma Mortality Review 125
7.8 Nonsurgical Trauma Admissions Review 126
7.9 Trauma Diversions Review 127
7.10 Prehospital Care Feedback 128

8 Education: Professional and Community Outreach **131**
8.1 Public and Professional Trauma Education 133
8.2 Nursing Trauma Orientation and Education 134
8.3 Prehospital Provider Training 135
8.4 General Surgery Resident Education 136
8.5 General Surgery Senior Resident Rotations 137
8.6 General Surgery Resident Coverage 138

9 Research **141**
9.1 Research and Scholarly Activities 143

Appendix A: Board Certification **144**

Appendix B: Acronyms **145**

Standards Quick Reference Guide **146**

Important Notice about the Use of This Document

These standards are intended solely as qualification criteria for the Verification, Review, and Consultation (VRC) Program. They do not constitute a standard of care and are not intended to replace the medical judgment of the physician or health care professional in individual circumstances. "Standard," as used in this manual, is defined as a "qualification for verification," not "standard of care."

In addition to verifying compliance with the standards as written in this manual, the Verification Review Committee may consider other factors not stated herein when reviewing a program for verification and reserves the right to withhold verification on this basis.

Confidentiality Requirements

The American College of Surgeons and the Committee on Trauma Verification Review Committee expect programs to follow local, state, and federal requirements related to patient privacy, risk management, and peer review in attempting to meet the standards outlined herein.

Acknowledgments

The Committee on Trauma (COT) is thankful to the representatives of the COT member organizations and the members of the COT Criteria Revision Work Groups, 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 the public feedback period. Those participating in the development of these standards and this edition of *Resources for Optimal Care of the Injured Patient* 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 to deliver 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 been shown to improve both care and outcomes in specialties such as cancer, trauma, and metabolic/bariatric surgery, as well as in 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 ACS. 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).

About the Verification, Review, and Consultation Program

The Verification, Review, and Consultation (VRC) Program is overseen by the Verification Review Committee, a subcommittee of the COT. The VRC Program is an important component of the COT's Trauma Quality Program, which also includes the Trauma Quality Improvement Program (TQIP) and Performance Improvement and Patient Safety (PIPS) Program. The COT first published criteria for the resources and personnel needed for optimal care of the trauma patient in 1976. Since 1987, the VRC Program has **verified** trauma centers that meet the standards—the presence of the resources, structures, and processes—outlined in *Resources for Optimal Care of the Injured Patient*. The **designation** of trauma centers is a regulatory process performed by authorized regional governmental or other agencies.

Foreword

This is the seventh edition of *Resources for Optimal Care of the Injured Patient* (hereafter referred to as the Resources Manual) published by the ACS COT. The Resources Manual outlines the standards required for trauma center verification by the VRC Program. The Resources Manual is used for the assessment of commitment, readiness, resources, policies, patient care, PI, and other relevant features of the trauma program.

The revision process of the Resources Manual has evolved over several years and has been deliberately inclusive, with input (through surveys and other means) from committed stakeholders such as trauma medical directors, trauma program managers, medical staff, hospital leadership, medical associations, state trauma leadership, and surgical specialties. Throughout the development of this edition, over 2,000 comments from stakeholders were used to guide decisions related to the revisions of these standards. In addition, content-specific experts were assembled into criteria revision teams to revise the standards.

The goals of this revision process were to:

- Revise standards to ensure utility, relevance, and effectiveness
- Increase clarity and incorporate stakeholder feedback
- Ensure that standards support and advance optimal care for injured patients
- Align standards with all ACS Quality Programs' accreditation/verification processes

The standards manuals have the same layout across all ACS Quality Programs to ensure consistency for hospitals participating in multiple programs. Standards are organized based on the nine categories noted below, and each standard includes the following sections: **Definition and Requirements, Additional Information, Measures of Compliance, Resources, and References.**

Category	Description
1. **Institutional Administrative Commitment**	Resource allocation, commitment to patient safety, focus on continuous PI
2. **Program Scope and Governance**	Trauma center levels and the functions of trauma program leadership
3. **Facilities and Equipment Resources**	Required facilities and equipment for care of the injured patient
4. **Personnel and Services**	Availability of personnel and services
5. **Patient Care: Expectations and Protocols**	Use of comprehensive clinical pathways and practice guidelines
6. **Data Surveillance and Systems**	Collection and use of trauma registry data
7. **Performance Improvement and Patient Safety (PIPS)**	Problem identification, resolution, outcomes improvement, and assurances of patient safety
8. **Education: Professional and Community Outreach**	Programs designed to improve outcomes and prevent injury
9. **Research**	Research activities for Level I trauma centers

Overview of the Verification, Review, and Consultation Program

Levels of Trauma Care

The VRC Program's classification system for trauma centers is not intended as a ranking of medical care but instead represents the resources available to care for patients with differing needs—from the most complex multisystem trauma patient to those with mild or moderate single-system injuries. Each trauma center has an important role in its community and a critical function in the trauma system. The ACS COT expects trauma centers' commitment to quality care to be the same regardless of level. Trauma centers must adhere to the standards outlined in the Resources Manual based on their level of verification.

There are three levels of trauma center verification, each defined by specific standards. These standards denote the spectrum of care that must be available to the injured patient at the facility, along with other expectations related to research and educational contributions to advance the field and increase capacity. In most trauma systems, designated trauma centers of different levels coexist with other acute care facilities, which should also be formal members of the trauma system; these facilities assist in caring for patients whose injuries are less acute, provide data for research programs, and participate in PI.

In many areas, Level I trauma centers serve as the lead hospitals. In systems with lower population densities, Level II trauma centers may assume this role. In smaller communities and rural settings, Level III trauma centers often serve as the lead hospital.

Level I

Level I trauma centers must be capable of providing system leadership and comprehensive trauma care for all injuries. In its central role, a Level I trauma center must have adequate depth of resources and personnel. Most Level I trauma centers are university-based teaching hospitals due to the resources required for patient care, education, and research. In addition to providing acute trauma care, these centers have an important role in local trauma system development, regional disaster planning, increasing capacity, and advancing trauma care through research.

Level II

Level II trauma centers are expected to provide initial definitive trauma care for a wide range of injuries and injury severity and may take on additional responsibilities in the region related to education, system leadership, and disaster planning.

Level III

Level III trauma centers typically serve communities that may not have timely access to a Level I or II trauma center and fulfill a critical role in much of the United States by serving more remote and/or rural populations. Level III trauma centers provide definitive care to patients with mild to moderate injuries, allowing patients to be cared for closer to home. These centers also have processes in place for the prompt evaluation, initial management, and transfer of patients whose needs might exceed the resources available.

The Verification, Review, and Consultation Process

The VRC Program is designed to assist trauma centers in the evaluation and improvement of the trauma care they deliver and to provide objective, external review of institutional capabilities and performance. To this end, the trauma program is evaluated by a peer review team experienced in trauma care. The review team assesses commitment, readiness, resources, policies, patient care, PI, and other relevant features of the trauma program, as outlined in the Resources Manual.

To be found compliant with a VRC Standard, the program must be able to demonstrate compliance with the entire **Definition and Requirements** and **Measures of Compliance** sections for that standard. The **Measures of Compliance** section is intended to provide summary guidance on how compliance must be demonstrated but is not intended to stand alone or supersede the **Definition and Requirements**.

ACS COT will provide a trauma center consultation, verification, or reverification site visit at the request of the hospital or state/emergency medical service (EMS) designating authority.

Consultation Site Visits
Trauma centers may consider a **consultation** site visit to prepare for the initial verification site visit. This consultation site visit is optional but strongly recommended. It will provide recommendations to educate and aid the trauma center in preparing for and attaining verification. A consultation site visit may also be beneficial to programs seeking to change their current verification level.

Verification/Reverification Site Visits
A **verification** site visit is for trauma centers seeking to be verified for the first time, to restore verification after a lapse in status, or to change their current verification level. During a verification site visit, reviewers will confirm whether the trauma center meets the standards outlined in the Resources Manual.

A **reverification** site visit is for ACS-verified programs that are planning to maintain their current verification level status. After successful verification, a program must undergo reverification every three years to maintain its verification status.

Site Visit Process
Trauma centers are required to submit an online application to request a site visit. Once the application is processed, the trauma center will receive access to the online prereview questionnaire (PRQ). The information provided by the trauma center in the PRQ allows the review team to have a clear understanding of the existing trauma care capabilities and the performance of the trauma program and medical staff before the review.

Additionally, programs may apply as **combined** facilities, wherein an adult trauma center and pediatric trauma center within the same building or campus undergo a single site visit.

A Level I pediatric trauma center and a Level I adult trauma center within the same hospital or campus may opt to undergo concurrent but separate site visits.

Review teams are composed of experts with substantial expertise in the areas of trauma care, trauma center operations, and trauma systems. A review team may include trauma surgeons, pediatric surgeons, nurses, and specialty physicians. The composition of a review team will vary depending on the type of site visit, hospital request, and/or state authority regulations.

The review encompasses all areas of the trauma center involved in trauma care. A typical site visit will include the following components:

- **Medical record review**—The review team will evaluate the care of trauma patients by reviewing medical records and evaluating the effectiveness of the center's PI program.
- **Risk-adjusted benchmark report review**—The trauma medical director (TMD) and review team will discuss specific efforts to address any issues arising from outcomes in one of the two most recent risk-adjusted benchmark reports (e.g., data drilldowns, PI projects).
- **Review of program documents**—The review team will examine supporting documentation such as call schedules, research, injury prevention efforts, and so forth utilized in providing care for trauma patients.
- **Review meeting**—The meeting is intended to include a discussion of the overall trauma program, clarification of the PRQ, specific concerns, unique features of the institution, discussion of the local trauma system, and clarification of the review process. It also provides an opportunity for the review team to highlight any program strengths to hospital administration. During this meeting, the review team will meet with the TMD, the trauma program manager (TPM), subspecialty liaisons, hospital and nursing administrators, the prehospital liaison, and the designating authority (if required). Other individuals may be invited if needed to clarify the PRQ and describe existing trauma center activities.
- **Hospital tour**—The tour will highlight all areas of the trauma center where trauma care is provided and will follow the path of a trauma patient through the facility. The review team will interview hospital staff and directors in those areas.

- **Exit interview**—The site visit concludes with an exit interview to share the preliminary findings of the review team with the trauma center leadership team. The review team will communicate the compliance with standards, strengths, opportunities for improvement, and recommendations they have identified. Final decisions regarding compliance with the standards will be made by the VRC Committee and may differ from the findings stated at the exit interview.

The review team will prepare a final report that supports the statements made at the exit interview. The VRC Program leadership will review the report, and the VRC Committee Chair and/or Vice-Chair will issue final approval. Trauma centers that are successfully verified will be added to the list of currently ACS-verified trauma centers on the VRC website *(https://www.facs.org/search/trauma-centers).*

Note that the information presented in this section is subject to change, as the site visit process is continually being improved. For additional details and the most up-to-date information, please refer to the VRC Program website.

Outcomes of Verification

Verification standards are divided into **Type I** and **Type II** standards. Type I standards are considered critical standards that directly impact patient care. The trauma program must be in compliance with all applicable standards at the time of the site visit. If noncompliance with any standard is identified, the trauma program must demonstrate compliance through a **Corrective Action Review** to achieve or extend verification. The type of Corrective Action Review will depend on the standard(s) in question and will be determined by the VRC Program leadership. Figures 1–3 outline the various visit results and verification outcomes.

Figure 1. Verification Visit Results and Outcomes

Visit Results	Verification Outcomes
Compliant with all standards	Verified, 3-year certificate
Noncompliant with up to 3 Type II standards	Verified, 1-year certificate
Noncompliant with any Type I standard **OR** Noncompliant with more than 3 Type II standards	Not verified

Figure 2. Pathways for Verification Outcomes

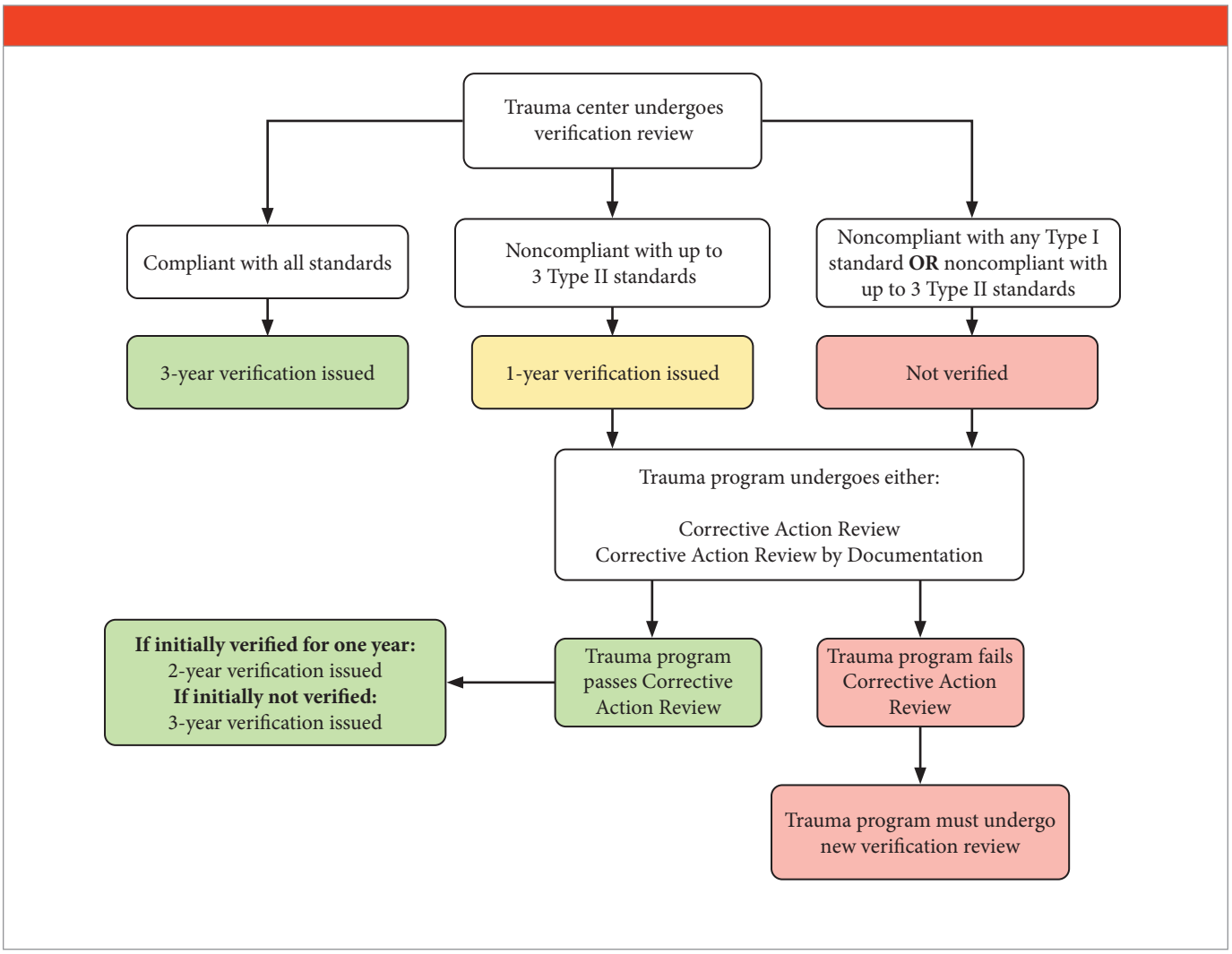
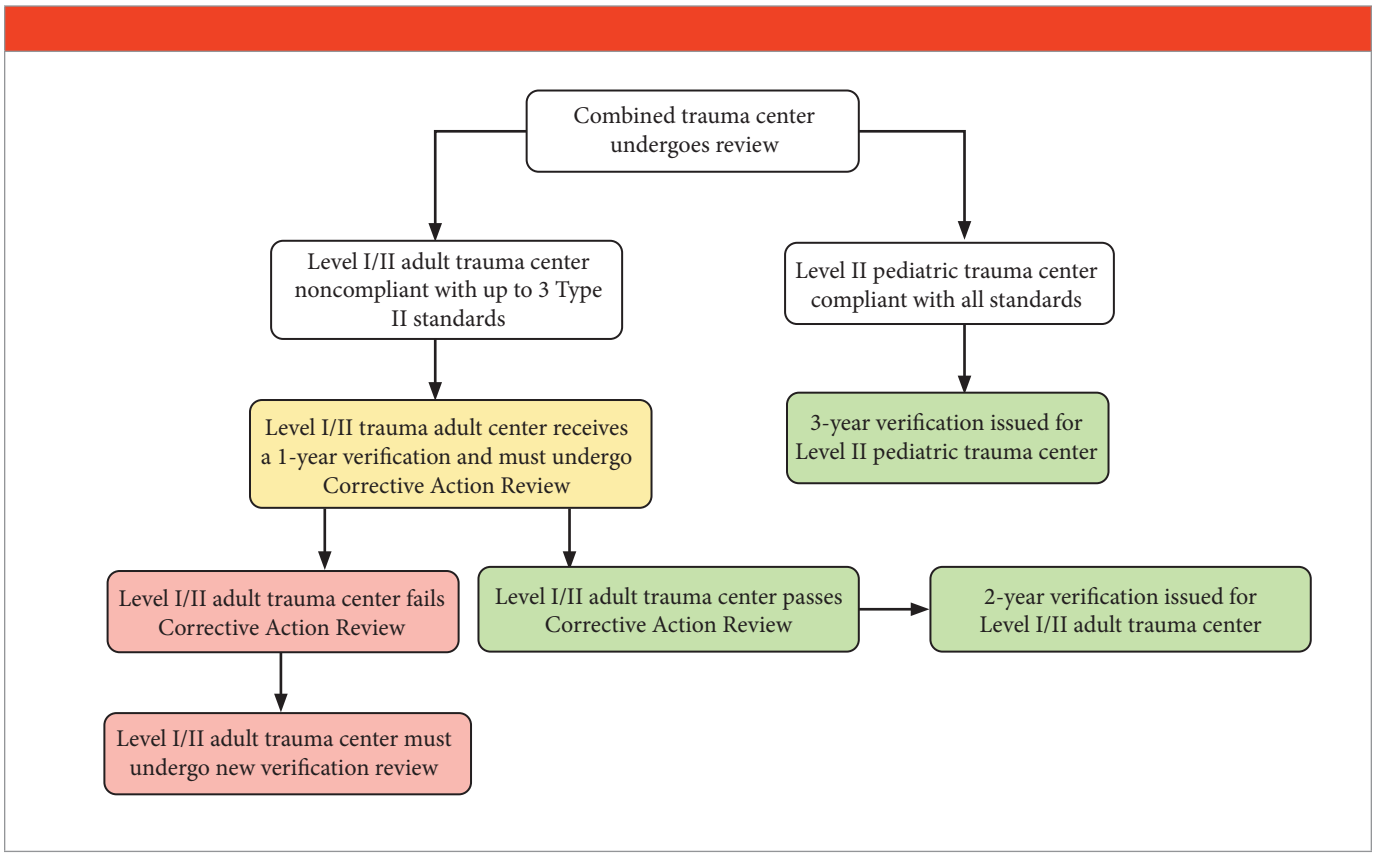


Figure 3. Example Pathways for Verification Outcomes for Combined Trauma Centers



Types of Corrective Action Reviews include:

- **Corrective Action Review**—A one-day review conducted by at least one member of the original review team in which the scope of review is narrowed to the corrective action implemented to resolve the previously identified noncompliant standard(s). This review type is most common with standards related to PI and, as such, requires medical record review.
- **Corrective Action Review by Documentation**—The trauma center will provide specific documentation requested by the VRC Program leadership within a predetermined time period. The original review team and VRC Chairs will review all submitted documentation. If the documentation satisfactorily resolves the noncompliant standard(s), verification will be extended.

Consistency in the Review Process

The ACS strives for consistency in the review process to ensure that it is equitable across trauma centers. The following steps ensure consistency of the review process:

1. A hospital PRQ allows the review team to have a preliminary understanding of the trauma care capability and performance of the hospital and medical staff before the review. This questionnaire is completed online by the trauma program and hospital staff.
2. An organized agenda is prepared for the review so that all site reviews are performed in an efficient and standardized manner.
3. All reviewers are approved and vetted by the COT and VRC. Reviewers are also provided online training courses to ensure that all facets of the review process are conducted appropriately.
4. Every site visit team has an assigned lead reviewer. These reviewers are experienced in trauma care and have been promoted to this position by the VRC.
5. All reviewers undergo routine performance appraisals, with feedback solicited from trauma center personnel, site review team members, report medical editors, and ACS staff.
6. The site visit report is written in a standardized format.
7. A final review is performed by the VRC Committee to ensure accurate interpretation of the findings, well-documented conclusions, and consistency and professionalism in the final report. Confidentiality of the entire review process ensures that the series of steps will be a constructive process in which a hospital can place its trust.
8. Finally, to ensure the quality and integrity of the VRC Program, the trauma center undergoing review will be asked to complete an extensive survey that includes the conduct of the review team and an overall assessment of the VRC Program.

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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 PI are the hallmarks of strong institutional administrative support that ensures compliance with standards and the highest quality of care for trauma patients.

1.1 Administrative Commitment—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the institutional governing body, hospital leadership, and medical staff must demonstrate continuous commitment and provide the necessary human and physical resources to properly administer trauma care consistent with the level of verification throughout the verification cycle.

Additional Information

Human resources include physicians, registered nurses, advanced practice providers (APPs), physician assistants, coordinators, and so forth.

This standard fully encompasses all 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 trauma center at the level specified and of the application for verification
- Commitment to adherence to the standards required for the level of verification
- Commitment to ensuring that the necessary personnel, facilities, and equipment are made available to support adherence to the standards

Resources

None

References

None

1.2 Research Support—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

The hospital administration of a Level I trauma center must demonstrate support for the research program.

Additional Information

Level I trauma centers have an important role in advancing the knowledge and science relevant to care for the injured patient. Advancements in the field might fall within many different domains including, but not limited to, the biological sciences, translational research, comparative effectiveness research, or implementation science.

Measures of Compliance

Documentation that demonstrates support of the research program, such as the following:

- Basic laboratory space
- Sophisticated research equipment
- Advanced information systems
- Biostatistical support
- Salary support for basic and translational scientists, or seed grants for junior investigators

Resources

None

References

None

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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 in order to ensure optimal care of the injured patient. This staff includes the program leadership (TPM and TMD) to oversee key functions of the trauma program. There must also be ongoing commitment from the trauma multidisciplinary PIPS committee.

2.1 State and Regional Involvement—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

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

Additional Information

Examples of participation may include the following:

- Participation in state and regional trauma advisory committees
- Leadership in state and regional medical audit committees
- Collaboration with regional trauma advisory committees, EMS, or other agencies to promote the development of state and regional systems
- Participation in media and legislative education to promote and develop trauma systems
- Participation in state and regional trauma needs assessment or injury surveillance
- Participation in the development of a state or regional trauma plan or state trauma registry
- Provision of technical assistance and education to hospitals and their providers within the region to improve system performance

Measures of Compliance

Written documentation that demonstrates participation, such as meeting agendas

Resources

None

References

None

2.2 Hospital Regional Disaster Committee—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must participate in regional disaster/emergency management committees, health care coalitions, and regional mass casualty exercises.

Additional Information

None

Measures of Compliance

- Attendance records from disaster/emergency management committee meetings, health care coalition meetings, and regional mass casualty exercises
- Hospital disaster plan

Resources

Hospitals and Health Care Coalitions, *Office of the Assistant Secretary for Preparedness and Response: https://www.phe.gov/preparedness/news/events/NPM18/Pages/health-care-community.aspx*

References

None

2.3 Disaster Management Planning—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma programs must be integrated into the hospital's disaster plan to ensure a robust surgical response:

- A trauma surgeon from the trauma panel must be included as a member of the hospital's disaster committee and be responsible for the development of a surgical response to a mass casualty event.
- The surgical response must outline the critical personnel, means of contact, initial surgical triage (including subspecialty triage when appropriate), and coordination of secondary procedures.
- The trauma program must participate in two hospital drills or disaster plan activations per year that include a trauma response and are designed to refine the hospital's response to mass casualty events.

Level I trauma centers must also include an orthopaedic surgeon from the orthopaedic trauma call panel as a member of the hospital's disaster committee.

Additional Information

Tabletop exercises are acceptable for the two annual hospital drills.

Measures of Compliance

- Attendance records demonstrating trauma surgeon participation in disaster committee meetings
- Hospital disaster plan that includes a surgical response
- Dates and nature of drills or activations during the reporting period

Resources

None

References

None

2.4 Level I Adult Trauma Patient Volume Criteria—TYPE I

Applicable Levels

LI

Definition and Requirements

A Level I adult trauma center must care for at least 1,200 trauma patients per year or at least 240 trauma patients with Injury Severity Score (ISS) greater than 15 per year.

Additional Information

For the purposes of this standard, a patient counts toward this volume criteria if they meet the National Trauma Data Standard (NTDS) inclusion criteria, which includes patients who meet the definition for observation status or are dead on arrival (DOA).

Measures of Compliance

Admission data that demonstrate compliance for the reporting period

Resources

ACS NTDS Data Dictionary: *https://www.facs.org/quality-programs/trauma/tqp/center-programs/ntdb/ntds/data-dictionary*

References

None

2.5 Level I Pediatric Trauma Patient Volume Criteria—TYPE I

Applicable Levels

PTCI

Definition and Requirements

A Level I pediatric trauma center must care for 200 or more injured patients under 15 years of age per year.

Additional Information

For the purposes of this standard, a patient counts toward this volume criteria if they meet the NTDS inclusion criteria, which includes patients who meet the definition for observation status or are DOA.

Measures of Compliance

Admission data that demonstrate compliance for the reporting period

Resources

ACS NTDS Data Dictionary: *https://www.facs.org/quality-programs/trauma/tqp/center-programs/ntdb/ntds/data-dictionary*

References

None

2.6 Adult Trauma Centers Admitting Pediatric Patients—TYPE I

Applicable Levels

LI, LII, LIII

Definition and Requirements

Adult trauma centers that care for 100 or more injured children under 15 years of age must have the following:

- Pediatric emergency department area
- Pediatric intensive care area
- Appropriate resuscitation equipment, as outlined in the pediatric readiness toolkit

Additional Information

This standard is applicable to programs that admit injured children but are not seeking pediatric verification. For the purposes of this standard, an admission is any patient who meets the NTDS inclusion criteria, which includes patients who meet the definition for observation status or are DOA.

Measures of Compliance

- Admission data for the reporting period
- Evaluated during the site visit process

Resources

Pediatric readiness toolkit, Emergency Medical Services for Children Innovation and Improvement Center: *https://emscimprovement.center/projects/pediatricreadiness/readiness-toolkit/*

ACS NTDS Data Dictionary: *https://www.facs.org/quality-programs/trauma/tqp/center-programs/ntdb/ntds/data-dictionary*

References

None

2.7 Trauma Multidisciplinary PIPS Committee—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a trauma multidisciplinary PIPS committee chaired by the TMD or an associate TMD.

Combined adult (Level I/II) and pediatric (Level II) trauma centers must hold separate adult and pediatric trauma multidisciplinary PIPS meetings with distinct minutes.

Additional Information

None

Measures of Compliance

- Terms of Reference that define the committee's scope, membership, frequency of meetings, and decision-making process
- Meeting minutes from the trauma multidisciplinary PIPS committee meetings during the reporting period

Resources

None

References

None

2.8 Trauma Medical Director Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the TMD must fulfill the following requirements:

- Hold current board certification or board eligibility in general surgery or pediatric surgery by the American Board of Medical Specialties (ABMS), American Osteopathic Association (AOA), or Royal College of Physicians and Surgeons of Canada (RCPS-C)
- Serve as the director of a single trauma program
- Be credentialed to provide trauma care
- Hold current Advanced Trauma Life Support (ATLS) certification
- Participate on the trauma call panel
- Provide evidence of 36 hours of trauma-related continuing medical education (CME) during the verification cycle. For pediatric TMD, 9 of 36 hours must be pediatric-specific CME
- In Level I trauma centers, the TMD must hold active membership in at least one national trauma organization and have attended at least one meeting during the verification cycle
- In Level II or III trauma centers, the TMD must hold active membership in at least one regional, state, or national trauma organization and have attended at least one meeting during the verification cycle

If a board-certified general surgeon who is not board-certified or board-eligible in pediatric surgery serves as the pediatric TMD, they must also:

- Hold current Pediatric Advanced Life Support (PALS) certification
- Have a written affiliation agreement with a pediatric TMD at another verified Level I pediatric trauma center whose role is to assist with process improvement, guideline development, and complex case discussions

Additional Information

Membership in an ACS state COT is not equivalent to membership in a national trauma organization.

A total of 30 hours of trauma-related CME obtained from board certification or recertification may be applied once to the CME criteria during the verification cycle.

In trauma centers undergoing a consultation or initial verification review, the TMD must have at least 12 hours of trauma-related CME during the reporting period.

Measures of Compliance

- Evidence of current board certification or board eligibility
- Roles and responsibilities of the TMD
- Credentialing letter
- Evidence of ATLS certification
- Call schedules
- CME certificates or Maintenance of Certification transcript
- Proof of membership in trauma organizations

For pediatric TMDs who are not board-certified in pediatric surgery, the following additional Measures of Compliance are required:

- Evidence of PALS certification
- Written affiliation agreement

Resources

None

References

None

2.9 Trauma Medical Director Responsibility and Authority—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the TMD must be responsible for and have the authority to:

- Develop and enforce policies and procedures relevant to care of the injured patient
- Ensure providers meet all requirements and adhere to institutional standards of practice
- Work across departments and/or other administrative units to address deficiencies in care
- Determine (with their liaisons) provider participation in trauma care, which might be guided by findings from the PIPS process or an Ongoing Professional Practice Evaluation (OPPE)
- Oversee the structure and process of the trauma PIPS program

Additional Information

None

Measures of Compliance

Roles and responsibilities of the TMD

Resources

None

References

None

2.10 Trauma Program Manager Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the TPM must fulfill the following requirements:

- Have 1.0 full-time equivalent (FTE) commitment to the trauma program
- Provide evidence of 36 hours of trauma-related continuing education (CE) during the verification cycle
- Hold current membership in a national or regional trauma organization

In Level II and III trauma centers, at least 0.5 FTE of the TPM's time must be spent on TPM-related activities. The remaining time must be dedicated to other roles within the trauma program.

In combined programs that are Level II adult and Level II pediatric trauma centers, it is acceptable for the pediatric TPM of a Level II pediatric trauma center to serve at least 0.5 FTE as the pediatric TPM. The remaining time must be devoted to other roles within the adult or pediatric trauma program.

Additional Information

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's role also includes partnering with the TMD in the development of policies and oversight of the program.

Measures of Compliance

- Roles and responsibilities of the TPM
- CE certificates or transcripts
- Proof of membership in trauma organizations

Resources

None

References

None

2.11 Trauma Program Manager Reporting Structure—Type II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the TPM must have a reporting structure that includes the TMD.

Additional Information

The reporting structure must, at minimum, include a "dotted line" to the TMD that allows for additional oversight and guidance to the TPM in execution of their activities. The intent is to ensure that the TMD has the opportunity to provide leadership to the TPM and partner with them in setting goals for the benefit of the program.

Measures of Compliance

Relevant organizational chart

Resources

None

References

None

2.12 Injury Prevention Program—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have an injury prevention program that:

- Has a designated injury prevention professional
- Prioritizes injury prevention work based on trends identified in the trauma registry and local epidemiological data
- Implements at least two activities over the course of the verification cycle with specific objectives and deliverables that address separate major causes of injury in the community
- Demonstrates evidence of partnerships with community organizations to support their injury prevention efforts

In Level I trauma centers, the injury prevention professional must be someone other than the TPM or PI personnel.

Additional Information

While there are no specific certification requirements for an injury prevention professional, this individual would have the skills to lead trauma center efforts to develop and maintain an organized, interdisciplinary, public health approach to injury prevention. Examples of injury prevention areas of focus include:

- Motor vehicle occupant safety
  - Child passenger safety seat education
  - Distracted driving
- Motorcycle and bicycle safety/helmet initiatives
- Pedestrian safety
- Fall prevention
- Firearm injury prevention programs
- Violence intervention and screening programs
- STOP THE BLEED® program as a community engagement strategy

Specific objectives and deliverables for each of the prevention initiatives should be documented in advance of implementation so that centers can describe their successes relative to their stated goals.

Measures of Compliance

- Job description for relevant staff
- Graphs/tables highlighting recent injury mechanism trends from registry
- Report of injury prevention activities including the following:
  - Activity name
  - Activity date
  - Participation data
  - Evaluation of outcomes (where feasible)
- Program objectives and deliverables for each injury prevention activity
- Any materials (including posters, flyers, press releases, etc.) relevant to the injury prevention initiatives

Resources

Below are suggestions for planning optimal injury prevention and violence intervention strategies with the greatest impact.

- **Utilize available data:** Identify high rates of injury and the populations in which these injuries occur. Analyze data to determine the mechanisms of injury, injury severity, and contributing factors. Utilize multiple injury and death data sources to reflect the true burden of injury.
- **Target at-risk populations:** Identify, understand, and target efforts toward at-risk populations while being sensitive to generational differences, as well as cultural, religious, and other established customs. Engage target population as a key stakeholder in development, implementation, and evaluation of the intervention.[1]
- **Leverage partnerships:** Make use of other trauma centers, prehospital organizations, public health and violence prevention organizations, law enforcement agencies, schools, churches, and others interested and involved in community injury prevention efforts.
- **Choose effective or well-informed intervention strategies:** New intervention program development, assessment, and implementation are complex and time-consuming. Not all proven interventions work in every population. Evidence-informed interventions may still require adaptation for demographic and risk factor differences.[2–6]
- **Develop a plan:** Logic models are a best-practice method to plan intervention strategies and should be utilized to outline the intervention effort, including delineating risk and protective factors.[7]

- **Evaluate:** Develop surveillance and monitoring tools to assess not only the available performance indicators of the trauma center's prevention efforts but also the prevention effectiveness. Evaluation efforts should start at program inception with a feasibility assessment and include intermediate and long-term outcomes.
- **Communicate:** Partner with local print and broadcast media, and be prepared for many opportunities for trauma center leaders to serve as a reliable source of injury prevention information. Understand your stakeholders and the at-risk populations, and articulate your prevention message based upon their vantage point.[7]
- **Advocate:** Elected and appointed leaders can help implement prevention efforts if the trauma center understands their goals and ways to work with them to create effective laws promoting prevention.

The list below includes ways in which trauma centers might track and report their prevention activities:

- Description of the mechanism of injury or root causes and risk factors of injury targeted by prevention programs
- Dates and locations of intervention events
- Trauma center resources
- Personnel hours (paid and volunteered)
- Trauma center expenses
- Community partners and their personnel hours
- Other sources of financial support
- Media exposure
- Involvement of elected and appointed officials
- Public policy initiatives or legislation
- Number of community members reached with prevention message or service
- Available outcome data related to the prevention activity and its target
- Strategic evaluation program, from inception to long-term outcomes

The Safe States Alliance provides direction on the core elements of injury prevention programs. The guidance offers programs ideas on how they might be expanded or strengthened and provides a description of what constitutes a model program: *https://www.safestates.org/page/traumaivp.*

The American Trauma Society, in partnership with the Trauma Prevention Coalition, has a training program for injury prevention professionals: *https://www.amtrauma.org/page/InjuryPrevention.*

Centers with high rates of trauma due to interpersonal violence might find this primer on developing a hospital-based violence intervention program helpful: *https://www.facs.org/quality-programs/trauma/advocacy/ipc/firearm-injury/hvip-primer* and can also find helpful information from the Health Alliance for Violence Intervention at *https://www.thehavi.org/.*

Helpful injury prevention resources for intentional and unintentional injury prevention can be found on the ACS COT's website, *https://www.facs.org/quality-programs/trauma/advocacy/ipc.*

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2.13 Organ Procurement Program—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, an organ procurement program must be available and consist of at least the following:

- An affiliation with an organ procurement organization (OPO)
- A written policy for notification of the regional OPO
- Protocols defining clinical criteria and confirmatory tests for the diagnosis of brain death

Additional Information

This standard pertains to solid organ procurement from trauma patients only.

Measures of Compliance

- OPO affiliation agreement
- Regional OPO notification policy
- Protocol for brain deaths

Resources

None

References

None

2.14 Child Life Program—TYPE II

Applicable Levels

PTCI, PTCII

Definition and Requirements

All pediatric trauma centers must have a child life program.

Additional Information

Child life programs promote emotional safety, reduce distress, increase adaptive coping, and protect and enhance developmental integrity by offering opportunities for therapeutic play, preparation, education, and interaction with others in an emotionally and physically safe environment.

Measures of Compliance

- Description of the scope of the child life program
- Roles and responsibilities of the position responsible for administering child life program

Resources

None

References

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3 Facilities and Equipment Resources

Rationale

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

3.1 Operating Room Availability—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, an operating room (OR) must be staffed and available within 15 minutes of notification, and in Level III trauma centers, within 30 minutes of notification.

Additional Information

The expectation is that the OR team is notified when a trauma patient is going to be sent to the OR. The initial call and the team members' response must be tracked. This can be documented with a logbook, an electronic medical record, or a badge swipe.

Measures of Compliance

- OR staffing policy
- Documentation of time of notification to time of response
- Evaluated during the site visit process

Resources

None

References

None

3.2 Additional Operating Room—TYPE II

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, if the first OR is occupied, an additional OR must be staffed and available.

Additional Information

A staffed OR is one where nursing and anesthesia personnel are available to prepare the room and patient for an emergency surgical intervention.

Timely access to surgical care is critical for patient safety. Trauma centers are required to have the capacity to respond to small surges in surgical activity without compromising patient care.

Measures of Compliance

OR policies or related materials outlining process, staffing, and expectations related to preparing a second OR, both during regular working hours and after hours

Resources

None

References

None

3.3 Operating Room for Orthopaedic Trauma Care—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have a dedicated OR prioritized for fracture care in nonemergent orthopaedic trauma.

In a Level III trauma center, access to the OR must be made available for nonemergent orthopaedic trauma.

Additional Information

Skeletal fixation is often secondary to immediate and life-saving resuscitative intervention; might be staged and often requires unique expertise. Predictable access to an OR assures that orthopaedic trauma care can be planned and that the right expertise will be available to provide optimal care.

Operational details related to staffing, frequency of availability, and use by other services should be collaboratively determined and approved by the TMD and the orthopaedic trauma leader. The frequency of availability should be sufficient to provide timely fracture care for patients.

Measures of Compliance

- OR orthopaedic schedule (LI, LII, PTCI, PTCII)
- OR schedule (LIII)

Resources

None

References

None

3.4 Blood Products—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have an adequate supply of blood products available.

Level III trauma centers must have an adequate supply of red blood cells and plasma available.

Additional Information

An "adequate supply" is based on the needs of the trauma center.

Measures of Compliance

Evaluated during the site visit process

Resources

None

References

None

3.5 Medical Imaging—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, the following services must be available 24 hours per day and be accessible for patient care within the time interval specified:

- Conventional radiography—15 minutes
- Computed tomography (CT)—15 minutes
- Point-of-care ultrasound—15 minutes
- Interventional radiologic procedures—1 hour
- Magnetic resonance imaging (MRI)—2 hours

In Level III trauma centers, the following services must be available 24 hours per day and be accessible for patient care within the time interval specified:

- Conventional radiography—30 minutes
- CT—30 minutes
- Point-of-care ultrasound—15 minutes

Additional Information

"Accessible for patient care" implies that the necessary human resources and equipment are available within the time specified. The time interval refers to the time between initial request and initiation of the test/procedure. This does not mean that every test must be completed within the interval specified. Timeliness depends on patient need. Review of perceived delays in imaging that might have affected patient care are a component of the PIPS program.

Measures of Compliance

- Equipment evaluated during site visit process
- Policies and procedures ensuring availability of services

Resources

None

References

None

3.6 Remote Access to Radiographic Imaging—TYPE II

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have a mechanism to remotely view radiographic images from referring hospitals within their catchment area.

Additional Information

Viewing mechanisms may include email, a phone app, a picture archiving and communications system (PACS), etc.

Measures of Compliance

Description of the mechanism for remote access to imaging

Resources

None

References

None

3.7 Cerebral Monitoring Equipment—TYPE I

Applicable Levels

LI, LII, LIII-N, PTCI, PTCII

Definition and Requirements

Level I, Level II, and Level III-N trauma centers must have cerebral monitoring equipment available.

Additional Information

Level III-N trauma centers are those that provide neurotrauma care for patients with moderate to severe traumatic brain injury (TBI), defined as Glasgow Coma Scale (GCS) of 12 or less at the time of emergency department arrival.

Cerebral monitoring could include equipment to monitor intracranial pressure and/or measure cerebral oxygenation.

Measures of Compliance

Evaluated during the site visit process

Resources

None

References

None

3.8 Cardiopulmonary Bypass Equipment—TYPE II

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, cardiopulmonary bypass equipment must be immediately available when required, or a contingency plan must exist to provide emergency cardiac surgical care.

Additional Information

The contingency plan must address the need for immediate transfer of patients with time-sensitive cardiovascular injuries.

Measures of Compliance

Equipment evaluated during the site visit process or through the contingency plan

Resources

None

References

None

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4 Personnel and Services

Rationale

The trauma program must have access to a wide variety of personnel and services to provide timely care to the injured patient.

4.1 Trauma Surgeon Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Trauma surgeons who are involved in the care of trauma patients must meet the following qualifications:

- Complete the ATLS course at least once
- Have privileges in general and/or pediatric surgery
- Hold current board certification or board eligibility in general surgery, or have been approved through the Alternate Pathway
  - Level I pediatric trauma centers must have at least two surgeons board-certified or board-eligible in pediatric surgery.
  - Level II pediatric trauma centers must have at least one surgeon board-certified or board-eligible in pediatric surgery.

Additional Information

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Evidence of ATLS certification
- Credentialing letter
- Evidence of board certification, board eligibility, or Alternate Pathway approval

Resources

None

References

None

4.2 Trauma Surgeon Coverage—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, trauma surgery coverage must be continuously available.

In Level I and II trauma centers, the trauma surgeon must be dedicated to a single trauma center while on call.

Additional Information

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

Measures of Compliance

- Call schedules over the course of the reporting period
- Evaluated during the site visit process

Resources

None

References

None

4.3 Trauma Surgery Backup Call Schedule—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have a published backup call schedule for trauma surgery.

Level III trauma centers must have a documented backup call schedule or a backup plan for trauma surgery.

Additional Information

Trauma surgeons who serve as a backup are not required to be dedicated to one hospital.

Measures of Compliance

- Backup trauma call schedules (LI, LII)
- Backup trauma call schedules or backup plan (LIII)

Resources

None

References

None

4.4 Trauma Surgeon Presence in Operating Room—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the trauma surgeon must be present in the operating suite for the key portions of operative procedures for which they are the responsible surgeon and must be immediately available throughout the procedure.

Additional Information

None

Measures of Compliance

Evaluated during the site visit process

Resources

None

References

None

4.5 Specialty Liaisons to the Trauma Service—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

The trauma program must have the following designated liaisons:

LI, LII, PTCI, PTCII:

- Board-certified or board-eligible emergency medicine physician
- Board-certified or board-eligible orthopaedic surgeon
- Board-certified or board-eligible anesthesiologist
- Board-certified or board-eligible neurosurgeon
- Board-certified or board-eligible radiologist
- Board-certified or board-eligible intensive care unit (ICU) physician
- Geriatric provider (applies only to LI and LII)

LIII:

- Board-certified or board-eligible emergency medicine physician
- Board-certified or board-eligible orthopaedic surgeon
- Board-certified or board-eligible anesthesiologist
- Board-certified or board-eligible neurosurgeon (applies only to LIII-N)
- Board-certified or board-eligible ICU physician

In Level I trauma centers, the orthopaedic trauma surgeon liaison must have completed an orthopaedic traumatology fellowship approved by the Orthopaedic Trauma Association (OTA). In Level I pediatric trauma centers, this requirement may be met by having a pediatric fellowship-trained orthopaedic surgeon.

Additional Information

Level III-N trauma centers are those that provide neurotrauma care for patients with moderate to severe TBI, defined as GCS of 12 or less at the time of emergency department arrival.

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Orthopaedic Surgeon Liaison
Level I pediatric trauma centers may share the adult orthopaedic trauma surgeon liaison from a Level I trauma center to meet this requirement.

Alternate Training Criteria
In Level I trauma centers, orthopaedic trauma surgeon liaisons who have not completed an OTA-approved orthopaedic traumatology fellowship may care for trauma patients by meeting the following criteria:

- At least 50 percent of the physician's practice is dedicated to providing care to orthopaedic trauma patients
- Active trauma committee membership in a regional, national, or international organization (outside of parent hospital or institution) and attendance of at least one meeting during the reporting period
- Evidence of peer-reviewed publications/research in orthopaedic trauma over the past three years
- Participation in trauma-related educational activities as an instructor or educator (outside of parent hospital or institution) in the past three years

Anesthesia Liaison
In Level III trauma centers, certified registered nurse anesthetists (CRNAs) and certified anesthesiologist assistants (CAAs) who are licensed to practice independently may serve as the anesthesia liaison.

Geriatric Provider Liaison
In Level I and II trauma centers, the geriatric liaison may be a geriatrician, or a physician with expertise and a focus in geriatrics, or an APP with certification, expertise, and a focus in geriatrics. The role of the liaison is to assist in the development and implementation of geriatric protocols and to be available for patient consultation.

Measures of Compliance

Documentation of individuals assigned to specific liaison roles and evidence of board certification, board eligibility, or Alternate Pathway approval

Resources

None

References

None

4.6 Emergency Department Director—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a board-certified or board-eligible emergency department physician medical director. In Level I and II trauma centers, the emergency department medical director must be board-certified or board-eligible in emergency medicine or pediatric emergency medicine.

Additional Information

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Roles and responsibilities of the emergency department director
- Evidence of board certification, board eligibility, or Alternate Pathway approval

Resources

None

References

None

4.7 Emergency Department Physician Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, emergency medicine physicians involved in the care of trauma patients must be currently board-certified or board-eligible, or have been approved through the Alternate Pathway.

- In Level I and II trauma centers, physicians must be board-certified or board-eligible in emergency medicine or pediatric emergency medicine.
  - Physicians who completed primary training in a specialty other than emergency medicine or pediatric emergency medicine prior to 2016 may participate in trauma care.
- In Level I pediatric trauma centers, at least one physician must be board-certified or board-eligible in pediatric emergency medicine.
- In Level III trauma centers, physicians must be board-certified or board-eligible in emergency medicine, pediatric emergency medicine, or a specialty other than emergency medicine.

All emergency medicine physicians must have completed the ATLS course at least once. Physicians who are board-certified or board-eligible in a specialty other than emergency medicine must hold current ATLS certification.

Additional Information

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Evidence of board certification, board eligibility, or Alternate Pathway approval
- Evidence of ATLS certification

Resources

None

References

None

4.8 Emergency Department Physician Coverage—TYPE I

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, a board-certified or board-eligible emergency medicine physician must be present in the emergency department at all times.

Additional Information

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

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Emergency medicine physician call schedules demonstrating trauma coverage
- Evidence of board certification, board eligibility, or Alternate Pathway approval

Resources

None

References

None

4.9 Pediatric Critical Care Staffing—TYPE II

Applicable Levels

PTCI

Definition and Requirements

In Level I pediatric trauma centers, there must be at least two physicians who are board-certified or board-eligible in pediatric critical care medicine or in both pediatric surgery and surgical critical care.

These two physicians must practice at least part of their time in the ICU where the majority of pediatric trauma patients are cared for.

Additional Information

Refer to Appendix A for details on board certification and board eligibility.

Measures of Compliance

- Evidence of board certification or board eligibility
- ICU call schedules

Resources

None

References

None

4.10 Neurotrauma Care—TYPE I

Applicable Levels

LI, LII, LIII-N, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have board-certified or board-eligible neurosurgeons continuously available for the care of neurotrauma patients.

Level III-N trauma centers must have board-certified or board-eligible neurosurgeons.

In Level I pediatric trauma centers, there must be at least one board-certified or board-eligible neurosurgeon who has completed a pediatric neurosurgery fellowship.

Additional Information

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

Level III-N trauma centers are those that provide neurotrauma care for patients with moderate to severe TBI, defined as GCS of 12 or less at the time of emergency department arrival.

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Trauma neurosurgery call schedules
- Evidence of board certification, board eligibility, or Alternate Pathway approval
- Level I pediatric center: CV of a board-certified or board-eligible neurosurgeon who completed a pediatric neurosurgery fellowship

Resources

None

References

None

4.11 Orthopaedic Trauma Care—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Trauma centers must have board-certified or board-eligible orthopaedic surgeons continuously available for the care of orthopaedic trauma patients and must have a contingency plan for when orthopaedic trauma capabilities become encumbered or overwhelmed.

In Level I pediatric trauma centers, at least one board-certified or board-eligible orthopaedic surgeon must have completed a pediatric orthopaedic fellowship.

Additional Information

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

Refer to Appendix A for details on board certification, board eligibility, and the Alternate Pathway.

Measures of Compliance

- Orthopaedic trauma surgery call schedules
- Orthopaedic surgery contingency plan
- Evidence of board certification, board eligibility, or Alternate Pathway approval
- Level I pediatric center: CV of a board-certified or board-eligible orthopaedic surgeon who completed a pediatric orthopaedic fellowship

Resources

None

References

None

4.12 Specialized Orthopaedic Trauma Care—TYPE II

Applicable Levels

LII, PTCI, PTCII

Definition and Requirements

Trauma centers must have an orthopaedic surgeon who has completed an OTA-approved fellowship or has met the alternate training criteria. This requirement may also be met by having transfer protocols specifying the type of patients/injuries that will be transferred to a center with an orthopaedic surgeon who has completed an OTA-approved fellowship or meets the alternate training criteria.

Additional Information

None

Measures of Compliance

- CV of the orthopaedic surgeon with OTA-approved fellowship or credentials for alternate training (refer to Standard 4.5 for criteria)
- Transfer protocols

Resources

None

References

None

4.13 Anesthesia Services—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, anesthesia services must be available within 15 minutes of request. Furthermore, the attending anesthesiologist must be present within 30 minutes of request for all operations.

In Level III trauma centers, anesthesia services must be available within 30 minutes of request.

Additional Information

Anesthesia services may be composed of anesthesiologists, CA-3 and CA-4 residents, CRNAs, or CAAs.

These providers must be able to begin an emergency operation per hospital policy or credentialing.

For Level III trauma centers in states where CRNAs are licensed to practice independently, CRNAs should follow local or institutional practices and may not require physician supervision.

Measures of Compliance

Anesthesia services response documentation that includes the following:

- Anesthesia clinician
- Time of request to time of response

Resources

None

References

None

4.14 Radiologist Access—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, a radiologist must have access to patient images and be available for imaging interpretation, in person or by phone, within 30 minutes of request.

Additional Information

The time is measured from time of request to time of interpretation.

Measures of Compliance

- Radiology policy or guidelines
- Evaluated during the site visit process

Resources

None

References

None

4.15 Interventional Radiology Response for Hemorrhage Control—TYPE II

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have the necessary human and physical resources continuously available so that an endovascular or interventional radiology procedure for hemorrhage control can begin within 60 minutes of request.

Additional Information

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

The response time is tracked from request to arterial puncture.

Physician resources could include an interventional radiologist, a neurosurgeon/neurologist, or a vascular surgeon credentialed to perform angiography and embolization or stent placement.

Measures of Compliance

- Report of time interval between request and arterial puncture for patients undergoing interventions for hemorrhage control
- Call schedules

Resources

None

References

None

4.16 ICU Director—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have an ICU surgical director who is board-certified or board-eligible in general surgery and actively participates in unit administration.

In Level I adult trauma centers, the ICU surgical director must be board-certified or board-eligible in surgical critical care.

Additional Information

"Active participation in unit administration" is defined as participating in the development of pathways and protocols for the care of trauma patients and in unit-based PI activities. It is expected that the ICU surgical director participate in the care of patients in the ICU where the majority of trauma patients are cared for.

In all trauma centers, the TMD may serve as the ICU director or codirector.

Refer to Appendix A for details on board certification and board eligibility.

Measures of Compliance

- Role and responsibilities of the surgical ICU director and/or codirector
- Protocols/pathways and PI initiatives specific to the care of the injured patient
- Evidence of board certification or board eligibility

Resources

None

References

None

4.17 ICU Physician Coverage—TYPE I

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

In Level I and II trauma centers, the ICU must be staffed with physicians who are continuously available within 15 minutes of request and whose primary responsibility is to the ICU.

Additional Information

Physicians include residents, fellows, or attendings.

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

Measures of Compliance

- ICU/PICU call schedules
- Evaluated during the site visit process

Resources

None

References

None

4.18 Intensivist Staffing—TYPE II

Applicable Levels

LII

Definition and Requirements

In Level II adult trauma centers, at least one intensivist must be board-certified or board-eligible in surgical critical care.

Additional Information

Refer to Appendix A for details on board certification and board eligibility.

Measures of Compliance

Evidence of board certification or board eligibility

Resources

None

References

None

4.19 ICU Provider Coverage for Level III Trauma Centers—TYPE I

Applicable Levels

LIII

Definition and Requirements

In Level III trauma centers, provider coverage of the ICU must be available within 30 minutes of request, with a formal plan in place for emergency coverage.

Additional Information

Coverage may include an intensivist, hospitalist, or APP.

The formal plan for emergency coverage should allow for patients' immediate needs to be met until the attending surgeon is available.

Measures of Compliance

- ICU call schedules
- ICU emergency coverage plan
- Evaluated during the site visit process

Resources

None

References

None

4.20 ICU Nursing Staffing Requirement—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the patient-to-nurse ratio in the ICU must be 1:1 or 2:1, depending on patient acuity as defined by the hospital policy for ICU nursing staffing.

Additional Information

None

Measures of Compliance

Hospital policy for ICU nursing staffing

Resources

None

References

None

4.21 Surgical Specialists Availability—TYPE I

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have continuous availability of the surgical expertise listed below:

- Orthopaedic surgery
- Neurosurgery
- Cardiothoracic surgery
- Vascular surgery
- Hand surgery
- Plastic surgery
- Obstetrics
- Gynecology surgery
- Ophthalmology
- Otolaryngology
- Urology

Additional Information

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

Measures of Compliance

Specialty surgeons' trauma call schedules

Resources

None

References

None

4.22 Soft Tissue Coverage Expertise—TYPE I

Applicable Levels

LI, PTCI

Definition and Requirements

Level I trauma centers must have the capability for comprehensive soft tissue coverage of wounds, including microvascular expertise for free flaps.

Additional Information

Comprehensive soft tissue coverage capability includes coverage of all open fractures, soft tissue coverage of a mangled extremity, and soft tissue defects of the head and neck.

Measures of Compliance

Specialty surgeon trauma call schedules

Resources

None

References

None

4.23 Craniofacial Expertise—TYPE I

Applicable Levels

LI, PTCI

Definition and Requirements

Level I trauma centers must have the capability to diagnose and manage acute facial fractures of the entire craniomaxillofacial skeleton, including the skull, cranial base, orbit, midface, and occlusal skeleton, with expertise contributed by any of the following specialists: otolaryngology, oral maxillofacial surgery, or plastic surgery.

Additional Information

Trauma centers may have a variety of different models of care for patients with craniofacial injuries, including a single specialty covering all injuries, a rotating schedule, or involvement of specific expertise depending on the nature of the injuries. All are acceptable models of care.

Measures of Compliance

Specialty surgeon trauma call schedules

Resources

None

References

None

4.24 Replantation Services—TYPE II

Applicable Levels

LI, LII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have replantation capability continuously available or must have in place a triage and transfer process with a replant center.

Additional Information

"Replantation capability" in this context refers to the replantation of a severed limb, digit, or other body part (e.g., ear, scalp, or penis). It may also include critical revascularization or care of a mangled extremity.

A triage and transfer process should ensure optimal care with a view toward minimizing time to replantation. The triage process might include diverting selected patients directly to a replant center if replantation is unavailable at the trauma center.

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

Measures of Compliance

- Specialty surgeon trauma call schedules
- Documentation of a regional and/or state triage and transfer process (for centers without capability or continuous coverage)

Resources

Trauma centers reporting that they provide 24/7/365 coverage for severe hand injuries—including replantation, revascularization, and care of the mutilated hand—are listed as part of the National Hand Trauma Center Network, an initiative of the American Society for Surgery of the Hand: *https://www.assh.org/s/hand-trauma-center-network.*

References

None

4.25 Medical Specialists—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have all of the following medical specialists:

- Cardiology*
- Gastroenterology*
- Internal medicine or pediatrics*
- Infectious disease*
- Nephrology*
- Pain management (with expertise to perform regional nerve blocks)
- Physiatry
- Psychiatry
- Pulmonary medicine*

An asterisk denotes services that must be continuously available.

Level III trauma centers must have internal medicine continuously available.

Additional Information

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

Other listed services must be available 7 days per week.

Measures of Compliance

Physician call schedules

Resources

None

References

None

4.26 Child Abuse (Nonaccidental Trauma) Physician—TYPE II

Applicable Levels

PTCI, PTCII

Definition and Requirements

Level I and II pediatric trauma centers must have either a physician on the medical staff who is board-certified or board-eligible in child abuse pediatrics or a physician with special interest in child abuse (nonaccidental trauma) who provides expertise to the trauma center.

Additional Information

The purpose of this role is to provide leadership in addressing the needs of children with nonaccidental trauma. This leadership includes the development of relevant policies and procedures and, where necessary, inpatient assessment and care.

Refer to Appendix A for details on board certification and board eligibility.

Measures of Compliance

- Roles and responsibilities of the child abuse physician
- Evidence of board certification, board eligibility, or qualifications of the child abuse physician

Resources

None

References

None

4.27 Allied Health Services—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Trauma centers must have the following allied health services available:

- LI, LII, PTCI, PTCII
  - Respiratory therapy (24/7/365)
  - Nutrition support
  - Speech therapy
  - Social worker (7 days per week)
  - Occupational therapy (7 days per week)
  - Physical therapy (7 days per week)
- LIII
  - Respiratory therapy (24/7/365)
  - Nutrition support
  - Social worker
  - Occupational therapy
  - Physical therapy
  - Speech therapy

Additional Information

None

Measures of Compliance

Description of the model of coverage for each service

Resources

None

References

None

4.28 Renal Replacement Therapy Services—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

Level I and Level II trauma centers must have renal replacement therapy services available to support patients with acute renal failure.

Level III trauma centers must have renal replacement therapy services available to support patients with acute renal failure or a transfer agreement in place if this service is not available.

Additional Information

Renal replacement therapy might include intermittent hemodialysis or any form of continuous renal replacement therapy to support patients with acute renal failure.

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

Measures of Compliance

- Evaluated during the site visit process
- Transfer agreement, if applicable (LIII)

Resources

None

References

None

4.29 Advanced Practice Providers—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, trauma and/or emergency department APPs who are clinically involved in the initial evaluation and resuscitation of trauma patients during the activation phase must have current ATLS certification.

Additional Information

This standard is not applicable to the following:

- APPs for neurosurgery and orthopaedic surgery
- CRNAs
- CAAs
- Scribes

Measures of Compliance

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

Resources

None

References

None

4.30 Trauma Registry Staffing Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, there must be at least 0.5 FTE dedicated to the trauma registry per 200–300 annual patient entries. The count of entries is defined as all patients who meet NTDS inclusion criteria, and those patients who meet inclusion criteria for hospital, local, regional and state purposes.

Combined adult and pediatric programs (Level I/II adult trauma center with Level II pediatric trauma center) may share resources, but someone must be identified as the lead pediatric registrar.

Additional Information

Trauma centers must take into account the additional tasks, beyond the abstraction and entry of patient data, that are assigned to the registrar. Processes such as report generation, data analysis, research assistance, and meeting various submission requirements will decrease the amount of time dedicated to the meticulous collection of patient data. Electronic downloads into the trauma registry also create additional tasks, as does ongoing data validation before data acceptance. Additional staff will be required to perform these tasks to ensure the integrity and quality of registry data, which are used for prevention, PIPS, and other essential aspects of the trauma program.

Measures of Compliance

- Number of trauma registry personnel
- Annual trauma registry report that shows the volume of all entries

Resources

None

References

None

4.31 Certified Abbreviated Injury Scale Specialist—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, at least one registrar must be a current Certified Abbreviated Injury Scale Specialist (CAISS).

Additional Information

None

Measures of Compliance

Evidence of CAISS Certification

Resources

CAISS is a certification offered by the Association for the Advancement of Automotive Medicine (AAAM).

References

None

4.32 Trauma Registry Courses—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, all staff members who have a registry role in data abstraction and entry, injury coding, ISS calculation, data reporting, or data validation for the trauma registry must fulfill all of the following requirements:

- Participate in and pass the most recent version of the AAAM's Abbreviated Injury Scale (AIS) course
- Participate in a trauma registry course that includes all of the following content:
  - Abstraction
  - Data management
  - Reports/report analysis
  - Data validation
  - HIPAA
- Participate in an ICD-10 course or an ICD-10 refresher course every five years

Additional Information

None

Measures of Compliance

- List of registry staff with date of hire
- For each registry staff member, include:
  - AAAM AIS Course Certificate
  - Certificate from trauma registry course
  - ICD-10 Course Certificate dated within the past five years

Resources

None

References

None

4.33 Trauma Registrar Continuing Education—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, each trauma registrar must accrue at least 24 hours of trauma-related CE during the verification cycle.

Additional Information

Trauma-related CE can be obtained internally, externally, or online.

Measures of Compliance

CE certificates or transcripts during the verification cycle

Resources

None

References

None

4.34 Performance Improvement Staffing Requirements—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, there must be at least 0.5 FTE dedicated performance improvement (PI) personnel when the annual volume of registry patient entries exceeds 500 patients. The count of entries is defined as all patients that meet NTDS inclusion criteria, and those patients who meet inclusion criteria for hospital, local, regional and state purposes.

When the annual volume exceeds 1,000 registry patient entries, the trauma center must have at least 1 FTE PI personnel.

Additional Information

Trauma centers are expected to have the necessary human resources to comply with the standards in Category 7—Performance Improvement and Patient Safety. Greater trauma center volumes might necessitate additional personnel.

Measures of Compliance

- Annual trauma registry report that shows the total volume of entries
- Roles and responsibilities of the PI personnel
- Number of PI personnel

Resources

None

References

None

4.35 Disaster Management and Emergency Preparedness Course—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

In Level I adult and pediatric trauma centers, the trauma surgeon liaison to the disaster committee must successfully complete the Disaster Management and Emergency Preparedness (DMEP) course at least once.

Additional Information

None

Measures of Compliance

Evidence of DMEP Certificate

Resources

None

References

None

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for excellence in trauma centers

AMERICAN COLLEGE OF SURGEONS
VERIFICATION, REVIEW, AND CONSULTATION (VRC) PROGRAM

5 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.

5.1 Clinical Practice Guidelines—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have evidence-based clinical practice guidelines, protocols, or algorithms that are reviewed at least every three years.

Additional Information

Clinical practice guidelines, protocols, or algorithms may be developed or revised in response to new evidence or opportunities for improvement.

Clinical practice guidelines provide an opportunity to standardize practice, which facilitates training, allows for auditing of practices, and tends to improve the quality of care.

Measures of Compliance

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

Resources

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

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

American College of Surgeons: *https://www.facs.org/quality-programs/trauma/tqp/center-programs/tqip/best-practice*

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

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

References

None

5.2 Trauma Surgeon and Emergency Medicine Physician Shared Responsibilities—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the shared roles and responsibilities of trauma surgeons and emergency medicine physicians for trauma resuscitation must be defined and approved by the TMD.

Additional Information

None

Measures of Compliance

Documentation outlining shared roles and responsibilities of trauma surgeons and emergency medicine physicians for trauma resuscitation

Resources

None

References

None

5.3 Levels of Trauma Activation—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the criteria for tiered activations must be clearly defined. For the highest level of activation, the following eight criteria must be included:

1. Confirmed blood pressure less than 90 mm Hg at any time in adults, and age-specific hypotension in children
2. Gunshot wounds to the neck, chest, or abdomen
3. GCS less than 9 (with mechanism attributed to trauma)
4. Transfer patients from another hospital who require ongoing blood transfusion
5. Patients intubated in the field and directly transported to the trauma center
6. Patients who have respiratory compromise or are in need of an emergent airway
7. Transfer patients from another hospital with ongoing respiratory compromise (excludes patients intubated at another facility who are now stable from a respiratory standpoint)
8. Emergency physician's discretion

Additional Information

The trauma program may include additional criteria.

Measures of Compliance

List of criteria for each tier of activation

Resources

None

References

None

5.4 Trauma Surgeon Response to Highest Level of Activation—Type I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

For the highest level of activation, at least 80 percent of the time, the trauma surgeon must be at the patient's bedside within 15 minutes (Level I or II trauma centers) or 30 minutes (Level III trauma centers) of patient arrival.

Additional Information

The trauma surgeons must meet this target in aggregate. While postgraduate trainees might initiate resuscitation, their presence does not count toward meeting this standard.

Measures of Compliance

Report that includes the number of highest-level trauma activations and the proportion for which the trauma surgeon was present within 15 minutes (Level I or II trauma centers) or 30 minutes (Level III trauma centers)

Resources

None

References

None

5.5 Trauma Surgical Evaluation for Activations below the Highest Level—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

The trauma program must define and meet the acceptable response time to trauma surgical evaluation for activations other than the highest level.

Additional Information

The response time is measured from the initial trauma activation (or initial consultation) and trauma surgery team evaluation (as defined by the trauma program).

Measures of Compliance

- Criteria for lower-level activation where a trauma surgical evaluation is required
- Response report for time to trauma surgical evaluation for lower-level activations

Resources

None

References

None

5.6 Care Protocols for the Injured Older Adult—TYPE II

Applicable Levels

LI, LII

Definition and Requirements

Level I and II trauma centers must have the following protocols for care of the injured older adult:

- Identification of vulnerable geriatric patients
- Identification of patients who will benefit from the input of a health care provider with geriatric expertise
- Prevention, identification, and management of dementia, depression, and delirium
- Process to capture and document what matters to patients, including preferences and goals of care, code status, advanced directives, and identification of a proxy decision maker
- Medication reconciliation and avoidance of inappropriate medications
- Screening for mobility limitations and assurance of early, frequent, and safe mobility
- Implementation of safe transitions to home or other health care facility

Additional Information

None

Measures of Compliance

Patient care protocols listed above

Resources

Institute for Healthcare Improvement. Age-Friendly Health Systems: Guide to Using the 4Ms in the Care of Older Adults. July 2020. *http://www.ihi.org/Engage/Initiatives/Age-Friendly-Health-Systems/Documents/IHIAgeFriendlyHealthSystems_GuidetoUsing4MsCare.pdf*

American College of Surgeons. *Optimal Resources for Geriatric Surgery* (2019). *https://www.facs.org/quality-programs/geriatric-surgery/standards*

American Geriatrics Society: *https://www.americangeriatrics.org*

Gerontological Society of America: *https://www.geron.org*

References

None

5.7 Assessment of Children for Nonaccidental Trauma—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a process in place to assess children for nonaccidental trauma.

Additional Information

The process should demonstrate evidence of integration with child protective service, child advocacy center, etc.

Measures of Compliance

Nonaccidental trauma protocols/policies

Resources

None

References

None

5.8 Massive Transfusion Protocol—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a massive transfusion protocol (MTP) that is developed collaboratively between the trauma service and the blood bank.

Additional Information

The MTP includes a trigger for activation, a process for cessation, and strategies for preservation of unused blood. Appropriate clotting studies should be immediately available.

Measures of Compliance

Massive Transfusion Protocol

Resources

None

References

None

5.9 Anticoagulation Reversal Protocol—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a rapid reversal protocol in place for patients on anticoagulants.

Additional Information

The protocol should include therapeutic options and indications for the use of each reversal agent.

Measures of Compliance

Rapid reversal protocol

Resources

None

References

None

5.10 Pediatric Readiness—Type II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the emergency department must evaluate its pediatric readiness and have a plan to address any deficiencies.

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 an injured child. The components that define readiness are available in the Resources section below.

Measures of Compliance

Gap analysis with plan to address deficiencies in pediatric readiness

Resources

Pediatric readiness assessment: *https://emscimprovement.center/domains/pediatric-readiness-project/assessment/*

Other resources to address deficiencies: *https://emscimprovement.center/domains/pediatric-readiness-project/readiness-toolkit/*

References

Remick K, Gausche-Hill M, Joseph MM, et al. Pediatric Readiness in the Emergency Department. *Pediatrics*. 2018;142(5):e20182459. doi:10.1542/peds.2018-2459.

5.11 Emergency Airway Management—TYPE I

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a provider and equipment immediately available to establish an emergency airway.

Additional Information

The emergency airway provider must be capable of advanced airway techniques, including surgical airway.

Measures of Compliance

- Plan for emergency airway management that specifies provider and means of escalation
- Equipment evaluated during the site visit process

Resources

None

References

None

5.12 Transfer Protocols—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

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

Additional Information

None

Measures of Compliance

Transfer protocols

Resources

None

References

None

5.13 Decision to Transfer—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the decision to transfer an injured patient must be based solely on the needs of the patient, without consideration of their health plan or payor status.

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.

Measures of Compliance

Evaluated during the site visit process

Resources

ACS Statement on Managed Care and the Trauma System: *https://www.facs.org/about-acs/statements/21-managed-trauma*

References

None

5.14 Transfer Communication—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, when trauma patients are transferred, the transferring provider must directly communicate with the receiving provider to ensure safe transition of care. This communication may occur through a transfer center.

Additional Information

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

Measures of Compliance

Transfer communication documentation

Resources

None

References

None

5.15 Trauma Diversion Protocol—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, diversion protocols must be approved by the TMD and include:

- Agreement of the trauma surgeon in the decision to divert
- A process for notification of dispatch and EMS agencies
- A diversion log to record reasons for and duration of diversions

Additional Information

Trauma center diversions may occur due to the following (this is not an exhaustive list):

- Equipment failure (e.g., CT scan down)
- Critical infrastructure failure (e.g., weather, electrical, IT)
- Lack of essential services (e.g., neurosurgeon, trauma surgeon, or encumbered)
- Bed availability

Measures of Compliance

Diversion protocols that include, at minimum, the requirements above

Resources

None

References

None

5.16 Trauma Diversion Hours—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must not exceed 400 hours of diversion during the reporting period.

Additional Information

"Diversion" is defined as the time during which the trauma center is not accepting trauma patients from the scene or via interfacility transfer.

Measures of Compliance

Trauma diversion report including total hours on diversion during the reporting period

Resources

None

References

None

5.17 Neurosurgeon Response—Type II

Applicable Levels

LI, LII, LIII-N, PTCI, PTCII

Definition and Requirements

Neurosurgical evaluation must occur within 30 minutes of request for the following:

- Severe TBI (GCS less than 9) with head CT evidence of intracranial trauma
- Moderate TBI (GCS 9–12) with head CT evidence of potential intracranial mass lesion
- Neurologic deficit as a result of potential spinal cord injury (applicable to spine surgeon, whether a neurosurgeon or orthopaedic surgeon)
- Trauma surgeon discretion

In Level I, II, and III-N trauma centers, neurosurgical provider response times must be documented.

In all levels of trauma centers, the neurosurgery attending must be involved in clinical decision-making.

Additional Information

Level III-N trauma centers are those that provide neurotrauma care for patients with moderate to severe TBI, defined as GCS of 12 or less at the time of emergency department arrival.

A neurosurgery resident or APP may act as a consultant as long as there is documented communication with the neurosurgery attending.

The time is measured from time of request until start of neurosurgical evaluation.

Measures of Compliance

- Evidence of neurosurgery attending involvement
- Evaluated during the site visit process

Resources

Brain Trauma Foundation Guidelines for the Management of Severe TBI: *https://braintrauma.org/guidelines/guidelines-for-the-management-of-severe-tbi-4th-ed#/*

References

None

5.18 Neurotrauma Plan of Care for Level III Trauma Centers—TYPE II

Applicable Levels

LIII

Definition and Requirements

All Level III trauma centers must have a written plan approved by the TMD that defines the types of neurotrauma injuries that may be treated at the center.

Additional Information

None

Measures of Compliance

Neurotrauma treatment plan

Resources

None

References

None

5.19 Neurotrauma Contingency Plan—TYPE II

Applicable Levels

LI, LII, LIII-N, PTCI, PTCII

Definition and Requirements

Level I and II trauma centers must have a neurotrauma contingency plan and must implement the plan when neurosurgery capabilities are encumbered or overwhelmed.

Level III-N trauma centers must have a neurotrauma contingency plan that includes the potential for diversion and must implement the plan when neurosurgery capabilities are encumbered, overwhelmed, or unavailable.

The plan must include the following criteria:

- A thorough review of each instance by the PIPS program
- Monitoring of the effectiveness of the process by the PIPS program

Additional Information

Level III-N trauma centers are those that provide neurotrauma care for patients with moderate to severe TBI, defined as GCS of 12 or less at the time of emergency department arrival.

Neurosurgery capabilities are encumbered or overwhelmed when there is an inability to meet standards of care for patients with time-sensitive injuries.

Since Level III-N centers are not required to have continuous availability of neurosurgery, it is expected that there be an established plan for diversion of patients who might require time-sensitive neurotrauma care to lessen the need for secondary transfers.

Measures of Compliance

Neurotrauma contingency plan

Resources

None

References

None

5.20 Treatment Guidelines for Orthopaedic Injuries—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have treatment guidelines for, at minimum, the following orthopaedic injuries:

- Patients who are hemodynamically unstable attributable to pelvic ring injuries
- Long bone fractures in patients with multiple injuries (e.g., time to fixation, order of fixation, and damage control versus definitive fixation strategies)
- Open extremity fractures (e.g., time to antibiotics, time to OR for operative debridement, and time to wound coverage for open fractures)
- Hip fractures in geriatric patients (e.g., expected time to OR (LI, LII, LIII)

Additional Information

None

Measures of Compliance

Treatment guidelines for orthopaedic injuries

Resources

ACS Best Practices in the Management of Orthopaedic Trauma: *https://www.facs.org/quality-programs/trauma/tqp/center-programs/tqip/best-practice*

References

None

5.21 Orthopaedic Surgeon Response—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, an orthopaedic surgeon must be at bedside within 30 minutes of request for the following:

- hemodynamically unstable, secondary to pelvic fracture
- suspected extremity compartment syndrome
- fractures/dislocations with risk of avascular necrosis (e.g., femoral head or talus)
- vascular compromise related to a fracture or dislocation
- trauma surgeon discretion

The orthopaedic surgeon must be involved in the clinical decision-making for care of these patients.

Additional Information

An orthopaedic surgery resident or APP may act as a consultant as long as there is documented communication with the orthopaedic surgeon attending.

The time is measured from time of request until orthopaedic surgeon arrival at bedside.

Measures of Compliance

- Evidence of orthopaedic surgeon involvement
- Evaluated during the site visit process

Resources

None

References

None

5.22 Operating Room Scheduling Policy—Type II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have an OR booking policy that specifies targets for timely access to the OR based on level of urgency and includes access targets for a range of clinical trauma priorities.

Additional Information

None

Measures of Compliance

OR scheduling policy

Resources

None

References

None

5.23 Surgical Evaluation of ICU Patients—Type II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, trauma patients requiring ICU admission must be admitted to, or be evaluated by, a surgical service.

Additional Information

There must be a policy that defines the hospital's expectation of the time frame within which a trauma consult is performed for an ICU trauma patient. For example, a tertiary exam can be done before the trauma service signs off, or completed within 2 hours, 6 hours, or 24 hours, or as determined by the hospital policy.

The ICU policy includes notification of changes in care to the trauma service.

Measures of Compliance

- ICU policy
- Program documentation evaluated during the site visit

Resources

None

References

None

5.24 Trauma Surgeon Responsibility for ICU Patients—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the trauma surgeon must retain responsibility for the trauma patient in the ICU up to the point where the trauma surgeon documents transfer of primary responsibility to another service.

Additional Information

The trauma surgeon will retain responsibility while the trauma patient is under their care; this requires that they be kept informed of and concur with major therapeutic and management decisions when care is being provided by a dedicated ICU team.

Measures of Compliance

Evaluated during the site visit process

Resources

None

References

None

5.25 Communication of Critical Imaging Results—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, documentation of preliminary diagnostic imaging must include evidence that critical findings were communicated to the trauma team. The final report must accurately reflect the chronology and content of communications with the trauma team, including changes between the preliminary and final interpretations.

Additional Information

None

Measures of Compliance

Evaluated during the site visit process

Resources

None

References

None

5.26 Timely CT Scan Reporting—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, documentation of the final interpretation of CT scans must occur no later than 12 hours after completion of the scan.

Additional Information

None

Measures of Compliance

Radiology reports

Resources

None

References

None

5.27 Rehabilitation Services during Acute Phase of Care—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must meet the rehabilitation needs of trauma patients by:

- Developing protocols that identify which patients will require rehabilitation services during their acute inpatient stay
- Establishing processes that determine the rehabilitation care, needs, and services required during the acute inpatient stay
- Ensuring that the required services during acute inpatient stay are provided in a timely manner

Additional Information

Early multidisciplinary assessment of patients to determine their rehabilitation needs and provide the relevant services during the acute phase of care is critical to ensuring optimal functional recovery. Multidisciplinary assessment might include input from physicians (including physiatry, where applicable), physiotherapy, occupational therapy, speech language pathology, and mental health providers. These needs should be met as early as possible during the initial hospitalization.

Measures of Compliance

- Protocols that outline the process for identifying patients in need of rehabilitation services
- Chart review showing evidence of an interdisciplinary plan of care established through input across rehabilitation providers
- Chart review demonstrating the assessment of rehabilitation needs and that these needs were met in a timely manner

Resources

None

References

None

5.28 Rehabilitation and Discharge Planning—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a process to determine the level of care patients require after trauma center discharge, as well as the specific rehabilitation care services required at the next level of care. The level of care and services required must be documented in the medical record.

Additional Information

The level of care identifies the optimal disposition of the patient taking into account their needs; options include home with services, outpatient rehabilitation, an inpatient rehabilitation hospital, a skilled nursing facility, or a long-term acute care hospital. The specific services required might include rehabilitation expertise that focuses on spinal cord injury, TBI, musculoskeletal rehabilitation, or others relevant to the needs of the patient.

Discharge planning should also ensure a patient-centered approach. The core of a patient-centered approach is the acknowledgment that patients' perspectives can be integrated into all aspects of the planning, delivery, and evaluation of trauma center care.[1] A series of clinical trials conducted in US trauma care systems[2–4] suggest that patient-centered care transition interventions can address patients' post-injury concerns, enhance patient self-efficacy, and are associated with clinically relevant reductions in post-injury inpatient and emergency department health service use.

Level I and II trauma centers should adopt a means of facilitating the transition of patients into the community using patient-centered strategies such as the following:

- Peer-to-peer mentoring
- A trauma survivors program
- Participation in the American Trauma Society's Trauma Survivors Network program[5]
- Continuous case management that elicits and addresses patient concerns and links trauma center services with community care

Patient-centered trauma care is an area that can benefit from ongoing integration of research findings and evolving expert opinion.

Measures of Compliance

- Review of process during site visit
- Chart review

Resources

None

References

1. Committee on Quality of Health Care in America, Institute of Medicine. Crossing the Quality Chasm. Institute of Medicine; 2001.
2. Gassaway J, Jones ML, Sweatman WM, et al. Effects of Peer Mentoring on Self-Efficacy and Hospital Readmission after Inpatient Rehabilitation of Individuals with Spinal Cord Injury: A Randomized Controlled Trial. *Arch Phys Med Rehabil.* 2017;98(8):1526–1534.e2. doi:10.1016/j.apmr.2017.02.018.
3. Zatzick D, Russo J, Thomas P, et al. Patient-Centered Care Transitions after Injury Hospitalization: A Comparative Effectiveness Trial. *Psychiatry*. 2018;81(2):141–157. doi:10.1080/00332747.2017.1354621.
4. Major Extremity Trauma Rehabilitation Consortium. Early Effects of the Trauma Collaborative Care Intervention: Results from a Prospective Multicenter Cluster Clinical Trial. *J Orthop Trauma.* 2019;33(11):538–546. doi:10.1097/BOT.0000000000001581.
5. American Trauma Society. Available at: https://www.amtrauma.org/. Accessed February 5, 2022.

5.29 Mental Health Screening—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must meet the mental health needs of trauma patients by having:

- A protocol to screen patients at high risk for psychological sequelae with subsequent referral to a mental health provider (LI, LII, PTCI, PTCII)
- A process for referral to a mental health provider when required (LIII)

Additional Information

Level I and II trauma centers are required to have a structured approach to identify patients at high risk for mental health problems while Level III trauma centers are required to have a means of referral should a problem or risk be identified during inpatient admission.

Measures of Compliance

- Mental health screening and referral protocol (LI, LII, PTCI, PTCII)
- Mental health referral process (LIII)

Resources

None

References

None

5.30 Alcohol Misuse Screening—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must screen all admitted trauma patients greater than 12 years old for alcohol misuse with a validated tool or routine blood alcohol content testing. Programs must achieve a screening rate of at least 80 percent.

Additional Information

This standard applies to all admitted trauma patients, regardless of activation status.

Screening methods are at the discretion of the individual center. Examples of acceptable screening tools can be found in the Resources section below.

Measures of Compliance

Alcohol misuse report that includes criteria outlined in the standard

Resources

Committee on Trauma, American College of Surgeons. Alcohol Screening and Brief Intervention (SBI) for Trauma Patients: *https://www.facs.org/-/media/files/quality-programs/trauma/vrc-resources/alcohol-screening-and-brief-intervention-sbi-for-trauma-patients-cot-quick-guide.ashx*

References

None

5.31 Alcohol Misuse Intervention—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, at least 80 percent of patients who have screened positive for alcohol misuse must receive a brief intervention by appropriately trained staff prior to discharge. This intervention must be documented.

Level III trauma centers must have a mechanism for referral if brief intervention is not available as an inpatient.

Additional Information

Appropriately trained staff will be determined and credentialed by the institution. This may include nurses, social workers, etc.

Measures of Compliance

- Screening, Brief Intervention and Referral to Treatment (SBIRT) protocol
- Alcohol misuse intervention report (numerator = the number of patients [participatory and survived until discharge] that received an intervention, denominator = the number of patients [participatory and survived until discharge] who screened positive for alcohol misuse)

Resources

Committee on Trauma, American College of Surgeons. Alcohol SBI for Trauma Patients: *https://www.facs.org/-/media/files/quality-programs/trauma/publications/sbirtguide.ashx*

References

None

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VERIFICATION
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VERIFICATION, REVIEW, AND CONSULTATION (VRC) PROGRAM

6 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.

6.1 Data Quality Plan—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a written data quality plan and demonstrate compliance with that plan. At minimum, the plan must require quarterly review of data quality.

Additional Information

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

Ensuring data validity is an important part of a data quality plan. Validation may be internal or external.

Examples of external data validation include the Trauma Quality Programs (TQP) Data Center Validation Summary Report and the TQP Data Center Submission Frequency Report.

High-quality data are necessary for focused quality improvement efforts.

Measures of Compliance

- Written data quality plan
- Written results summarizing internal and/or external data validation
- Trauma center's trauma registry data validation report(s)
- Evidence of a comprehensive review of the TQP Data Center Validation Summary Report
- Evidence of a comprehensive review of the TQP Data Center Submission Frequency Report (if applicable)

Resources

None

References

None

6.2 Trauma Registry Patient Record Completion—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the trauma registry must be concurrent, defined as having a minimum of 80 percent of patient records completed within 60 days of the patient discharge date.

Additional Information

A completed record is one where all of the required data have been entered in the registry and the record has been closed.

Timeliness of data collection is necessary so that centers can validate their data and identify opportunities for improvement at the earliest possible time.

Measures of Compliance

Registry report covering the reporting period demonstrating that data for 80 percent of patient records are completed within 60 days of discharge date

Resources

None

References

None

6.3 Trauma Registry Data Collection and Submission—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, trauma registry data must be collected in compliance with the NTDS inclusion criteria and data element definitions, and must have been submitted to the TQP Data Center in the most recent call for data.

Additional Information

The "most recent call for data" is defined as the most recent call for data that occurred more than 30 days prior to the site visit.

As an example: A TQP call for data closed on March 1st. The subsequent TQP call for data closed on June 1st. For a center with a visit on June 15th, they will have been required to collect the data in compliance with NTDS definitions and submitted their data by March 1st. For a center with a visit on August 15th, they will need to meet the standard for data submitted by June 1st.

Data collection using standardized definitions is necessary to allow centers to compare their processes and outcomes with other centers. Timeliness of data collection and submission is necessary to ensure that opportunities for improvement are readily identified.

Measures of Compliance

- Submission of all records meeting NTDS inclusion criteria
- All submitted records must pass the NTDS validation requirements (containing no level I or II flags)
- Submitted records must include at least 12 continuous and complete months of trauma registry data eligible for submission in the most recent call for data (defined above).

Resources

None

References

None

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7 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 (PIPS). Problem resolution, outcomes improvement, and assurances of patient safety ("loop closure") must be readily identifiable through structured PI initiatives.

7.1 Trauma PIPS Program—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the trauma PIPS program must be independent of the hospital or departmental PI program, but it must report to the hospital or departmental PI program.

Additional Information

The PIPS program must be empowered to identify opportunities for improvement and develop actions to reduce the risk of patient harm, irrespective of the department, service, or provider. The expected frequency and level of review require the PIPS program to function independently from the hospital/departmental PI program. However, the PIPS program must have a means to report events and actions to a departmental/hospital PI program so that events are aggregated across the organization.

The hospital or departmental quality program must provide feedback and loop closure to the trauma program.

Trauma care typically involves many providers across several disciplines and departments. The PIPS program is most effective when it brings the providers together to review and implement opportunities for improvement.

Measures of Compliance

Hospital organization chart reflecting the relationship of the PIPS program to the organizational PI program and demonstrating bidirectional flow of information

Resources

None

References

None

7.2 PIPS Plan—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All 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, secondary, tertiary, and/or quaternary), with a listing for each level that clarifies:
  - Which cases are to be reviewed
  - Who performs the review
  - When cases can be closed or must be advanced to the next level
- Specifies the members and responsibilities of the trauma multidisciplinary PIPS committee
- Outlines an annual process for identification of priority areas for PI, based on audit filters, event reviews, and benchmarking reports

Additional Information

None

Measures of Compliance

PIPS plan that meets criteria outlined in this standard

Resources

Audit filters, event or report reviews:

- Surgeon arrival time for the highest level of activation
- Delay in response for urgent assessment by the neurosurgery and orthopaedic specialists
- Delayed recognition of or missed injuries
- Compliance with prehospital triage criteria, as dictated by regional protocols
- Delays or adverse events associated with prehospital trauma care
- Compliance of trauma team activation, as dictated by program protocols
- Accuracy of trauma team activation protocols
- Delays in care due to the unavailability of emergency department physician (Level III)
- Unanticipated return to the OR
- Unanticipated transfer to the ICU or intermediate care
- Transfers out of the facility for appropriateness and safety
- All nonsurgical admissions (excludes isolated hip fractures)
- Radiology interpretation errors or discrepancies between the preliminary and final reports
- Delays in access to time-sensitive diagnostic or therapeutic interventions
- Compliance with policies related to timely access to the OR for urgent surgical intervention
- Delays in response to the ICU for patients with critical needs
- Lack of availability of essential equipment for resuscitation or monitoring
- MTP activations
- Significant complications and adverse events
- Transfers to hospice
- All deaths: inpatient, died in emergency department (DIED), DOA
- Inadequate or delayed blood product availability
- Patient referral and organ procurement rates
- Screening of eligible patients for psychological sequelae
- Delays in providing rehab services
- Screening of eligible patients for alcohol misuse
- Pediatric admissions to nonpediatric trauma centers
- Neurotrauma care at Level III trauma centers
- Neurotrauma diversion

References

None

7.3 Documented Effectiveness of the PIPS Program—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All 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 including peer review minutes, loop closure documentation, monitoring of event rates, OPPE, benchmarking reports, or other relevant data to inform and evaluate PI

Resources

None

References

None

7.4 Participation in Risk-Adjusted Benchmarking Programs—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must participate in a risk-adjusted benchmarking program and use the results to determine whether there are opportunities for improvement in patient care and registry data quality.

Additional Information

TQIP meets the participation requirement for a risk-adjusted benchmarking program.

Risk-adjusted benchmarking programs other than TQIP must meet criteria listed on the TQP website, found on *www.facs.org*.

Participation in a risk-adjusted benchmarking program with regular review of data provides the best opportunities for centers to understand where there might be gaps in their quality of care.

Measures of Compliance

- During the site visit process, present the opportunities for improvement and actions taken to improve patient care and registry data quality from the evaluation of the risk–adjusted benchmarking report
- For trauma centers not participating in TQIP:
  - Documented proof of participation in a risk-adjusted benchmarking program that meets criteria listed for alternate programs
  - Copies of the two most recent risk-adjusted benchmark reports, at least one of which must have been received during the reporting period

Resources

None

References

None

7.5 Physician Participation in Prehospital Performance Improvement—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, a physician from the emergency department or trauma program must participate in the prehospital PI process, including assisting in the development of prehospital care protocols relevant to the care of trauma patients.

Additional Information

None

Measures of Compliance

- Attendance records from prehospital PI meetings
- Prehospital care protocols relevant to the care of trauma patients

Resources

None

References

None

7.6 Trauma Multidisciplinary PIPS Committee Attendance—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must meet the following trauma multidisciplinary PIPS committee meeting attendance thresholds:

- 60 percent of meetings for the TMD (cannot be delegated to the associate TMD)
- 50 percent of meetings for each trauma surgeon
- 50 percent of meetings for the liaisons (or one predetermined alternate) from emergency medicine, neurosurgery, orthopaedic surgery, critical care medicine, anesthesia, and radiology

Combined adult (Level I/II) and pediatric (Level II) trauma centers must have 50 percent attendance by a representative (TMD or one predetermined alternative) from the other program; this representative is responsible for disseminating information to panel members of the other program.

Additional Information

Attendance requirements may be met by teleconference. Trauma multidisciplinary PIPS committee meeting attendance may be waived for military deployment, medical leave, and missionary work. Documentation in support of absences must be provided by the trauma center.

The minimum attendance for liaisons is based on the combined attendance for the alternate and the liaison. If the TMD also serves as the ICU director, this person meets the minimum attendance threshold as the TMD and the ICU director.

If a trauma surgeon only serves as a backup, (i.e., is never first call for trauma surgery), they are not subject to attendance requirements. The TMD should disseminate information discussed in these meetings to everyone involved in caring for trauma patients.

Measures of Compliance

- Dates of PIPS committee meetings throughout the reporting period
- PIPS committee meeting attendance list

Resources

None

References

None

7.7 Trauma Mortality Review—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, all cases of trauma-related mortality and transfer to hospice must be reviewed and classified for potential opportunities for improvement.

Deaths must be categorized as:
- Mortality with opportunity for improvement
- Mortality without opportunity for improvement

Additional Information

Mortalities include DOA, DIED, and patients who died after withdrawal of life-sustaining care.

The goal of reviewing events is to identify potential opportunities for improvement.

A death should be designated as "mortality with opportunity for improvement" if any of the following criteria are met:
- Anatomic injury or combination of severe injuries but may have been survivable under optimal conditions
- Standard protocols were not followed, possibly resulting in unfavorable consequence
- Provider care was suboptimal

Reviewing each mortality and transfer to hospice provides the greatest assurance that the trauma program will identify opportunities for improvement. Transfers to hospice require review to ensure there were no opportunities for improvement in care that might have significantly changed the clinical course that ultimately led to the decision for hospice care.

Measures of Compliance

Trauma multidisciplinary PIPS committee meeting minutes documenting review of mortalities

Resources

None

References

None

7.8 Nonsurgical Trauma Admissions Review—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, all nonsurgical trauma admissions must be reviewed by the trauma program.

Nonsurgical admissions (NSA) without trauma or other surgical consultation, with ISS > 9, or with identified opportunities for improvement must, at a minimum, be reviewed by the TMD in secondary review.

Additional Information

Nonsurgical admissions with trauma or other surgical consultations, with ISS ≤ 9, or without other identified opportunities for improvement may be closed in primary review.

Measures of Compliance

- Written PI plan that includes NSA review process (submitted as part of Standard 7.2)
- Report on all NSA
- Documentation that the cases were reviewed

Resources

None

References

None

7.9 Trauma Diversions Review—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, all instances of diversion must be reviewed by the trauma operations committee.

Additional Information

The name of the trauma operation committee may vary. For example, it might be called the "trauma/hospital systems committee."

Measures of Compliance

Minutes/documentation from the trauma operations committee review

Resources

None

References

None

7.10 Prehospital Care Feedback—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must have a process of reviewing and providing feedback to:

- EMS agencies, related to accuracy of triage and provision of care
- Referring providers, related to the care and outcomes of their patients and any potential opportunities for improvement in initial care

Additional Information

None

Measures of Compliance

- Documentation of the process for reviewing and providing feedback
- Evidence of communication (feedback) between trauma center, EMS agencies, and referring providers

Resources

None

References

None

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8 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.

8.1 Public and Professional Trauma Education—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

All trauma centers must provide public and professional trauma education.

Additional Information

Examples of public and professional trauma education include:

- Advanced Trauma Life Support® (ATLS®)
- International Trauma Life Support© (ITLS©)
- Prehospital Trauma Life Support® (PHTLS®)
- STOP THE BLEED®
- Trauma Evaluation and Management™ (TEAM™)

Measures of Compliance

Schedule for trauma education provided by the trauma center

Resources

None

References

None

8.2 Nursing Trauma Orientation and Education—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

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

Nurses must participate in trauma CE corresponding to their scope of practice and patient population served.

Additional Information

Examples of orientation may include:

- Center-developed educational program that integrates PIPS-identified issues
- Education specific to patient population 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

Measures of Compliance

- Nursing orientation materials
- CE certificates or transcripts

Resources

None

References

None

8.3 Prehospital Provider Training—TYPE II

Applicable Levels

LI, LII, LIII, PTCI, PTCII

Definition and Requirements

In all trauma centers, the trauma program must participate in the training of prehospital personnel.

Additional Information

None

Measures of Compliance

Documentation demonstrating training of prehospital personnel

Resources

None

References

None

8.4 General Surgery Resident Education—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

Level I trauma centers must have a trauma rotation with defined objectives and curriculum for PGY3, PGY4, or PGY5 general surgical residents.

Additional Information

None

Measures of Compliance

Learning objectives and curriculum for resident trauma rotation

Resources

None

References

None

8.5 General Surgery Senior Resident Rotations—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

In Level I trauma centers, all general surgery residents must be assigned to the trauma rotation for a minimum of three months during their PGY4 or PGY5 to ensure sufficient exposure to trauma care. For pediatric trauma centers, PGY3 surgical residents are acceptable.

Additional Information

The three-month trauma rotation can be accomplished by a series of call assignments during the year and may include any combination of adult and pediatric trauma exposure. This does not have to be a contiguous block of time.

Measures of Compliance

General surgical resident rotation schedule for 12 months of the reporting period

Resources

None

References

None

8.6 General Surgery Resident Coverage—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

Level I trauma centers must have trauma surgery coverage by PGY4 or PGY5 general surgery residents. If the number of PGY4 or PGY5 residents is insufficient to ensure coverage, PGY3 surgical residents and/or fellows are acceptable.

All general surgery residents and/or fellows must be from an Accreditation Council for Graduate Medicine Education (ACGME) accredited program.

Additional Information

Acceptable fellowships include trauma surgery, acute care surgery, surgical critical care, or pediatric surgery.

Measures of Compliance

- General surgical resident rotation schedule for 12 months of the reporting period
- ACGME accreditation letter(s)

Resources

None

References

None

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9 Research

Rationale

Level I trauma centers have an obligation to innovate and advance trauma care through research and other scholarly activities. These activities also create opportunities for the development of future trauma leaders.

9.1 Research and Scholarly Activities—TYPE II

Applicable Levels

LI, PTCI

Definition and Requirements

Level I trauma centers must demonstrate the following scholarly activities during the verification cycle:

- At least 10 trauma-related research articles*
- Participation by at least one trauma program faculty member as a visiting professor, invited lecturer, or speaker at a regional, national, or international trauma conference
- Support of residents or fellows in any of the following scholarly activities: laboratory experiences; clinical trials; resident trauma paper competitions at the state, regional, or national level; and other resident trauma research presentations

*Fulfillment of the research requirement must also meet the following criteria:

- At least three articles must be authored by general surgery/pediatric trauma providers
- Research activity must be performed at the trauma center
- If case series are to be counted, they must include more than five patients
- Basic science research must involve topics directly related to the pathophysiology of injury
- At least three articles must be from disciplines other than general/pediatric surgery
- All articles must be published or accepted for publication in peer-reviewed and indexed journals
- Authors from the trauma center must meet accepted authorship requirements of the International Committee of Medical Journal Editors
- One paper from acute care surgery may be included

Additional Information

None

Measures of Compliance

- 10 trauma-related research articles
- Speaker invitation
- Evidence showing support of resident or fellow scholarly activities

Resources

None

References

None

Appendix A: Board Certification

Board Certification or Board Eligibility Requirements
Board certification or 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.

Alternate Pathway
Physicians who have trained outside the United States or Canada may participate in the trauma program if approved by the Alternate Pathway.

Surgeons who were inducted as a Fellow of the American College of Surgeons (FACS) prior to January 1, 2017, are exempt from the full AP process but must provide evidence of 36 hours of trauma-related CME during the verification cycle.

The following physicians are eligible to be reviewed by the Alternate Pathway:
- Trauma surgeons
- Neurosurgeons
- Orthopaedic surgeons
- Emergency medicine physicians
- Anesthesiologist liaisons (Note: liaisons only)

Alternate Pathway requirements include:
- Completion of training equivalent to that required by the United States or Canada
- Evidence of 36 hours (12 hours annually prorated for new hires) of trauma-related CME during the verification cycle. For pediatric trauma care, 9 of 36 hours must be pediatric-specific CME.
- Hold current ATLS certification
- Hold active membership in at least one national or regional trauma organization and must have attended at least one meeting during the reporting period
- Trauma multidisciplinary PIPS committee meeting attendance rate of 50 percent or more during the reporting period
- Credentialed to provide trauma care
- Processes and outcomes of care must be comparable to that of other physicians*

*There is an expectation that the care provided by the alternate pathway candidate is monitored by the TMD and specialty liaison.

Previously Approved Alternate Pathway Physicians
The following is applicable to physicians who have previously been approved by the Alternate Pathway process:
- If the physician is at the same institution where they were approved by the Alternate Pathway, they do not need to reapply; however, they must provide evidence of 36 hours of trauma-related CME during the verification cycle.
- If the physician has moved to a new institution (different from where they were approved by the Alternate Pathway), they must reapply at the new institution.
- If the physician is covering multiple institutions and was previously approved by the Alternate Pathway at one of the institutions, they do not need to reapply.

Appendix B: Acronyms

- AAAM—Association for the Advancement of Automotive Medicine
- ACS—American College of Surgeons
- AIS—Abbreviated Injury Scale
- APP—advanced practice provider
- ATLS—Advanced Trauma Life Support
- CAA—certified anesthesiologist assistant
- CAISS—Certified Abbreviated Injury Scale Specialist
- CE—continuing education
- CME—continuing medical education
- COT—Committee on Trauma
- CRNA—certified registered nurse anesthetist
- CT—computed tomography
- DIED—died in emergency department
- DMEP—Disaster Management and Emergency Preparedness
- DOA—dead on arrival
- EMS—emergency medical service
- FTE—full-time equivalent
- GCS—Glasgow Coma Scale
- ICU—intensive care unit
- MTP—massive transfusion protocol
- NSA – nonsurgical admissions
- NTDS—National Trauma Data Standard
- OPO—organ procurement organization
- OPPE—Ongoing Professional Practice Evaluation
- OR—operating room
- OTL—orthopaedic trauma leader
- PI—performance improvement
- PIPS—Performance Improvement and Patient Safety
- PRQ—prereview questionnaire
- SBIRT—Screening, Brief Intervention and Referral to Treatment
- TBI—traumatic brain injury
- TMD—trauma medical director
- TPM—trauma program manager
- TQIP—Trauma Quality Improvement Program
- TQP—Trauma Quality Programs
- VRC—Verification, Review, and Consultation

Standards Quick Reference Guide

Standard #	Standard Name	Type	LI	LII	LIII (LIII-N)*	PTCI	PTCII
1 | Institutional Administrative Commitment							
1.1	Administrative Commitment	TYPE I	x	x	x	x	x
1.2	Research Support	TYPE II	x			x	
2 | Program Scope and Governance							
2.1	State and Regional Involvement	TYPE II	x	x	x	x	x
2.2	Hospital Regional Disaster Committee	TYPE II	x	x	x	x	x
2.3	Disaster Management Planning	TYPE II	x	x	x	x	x
2.4	Level I Adult Trauma Patient Volume Criteria	TYPE I	x				
2.5	Level I Pediatric Trauma Patient Volume Criteria	TYPE I				x	
2.6	Adult Trauma Centers Admitting Pediatric Patients	TYPE I	x	x	x		
2.7	Trauma Multidisciplinary PIPS Committee	TYPE I	x	x	x	x	x
2.8	Trauma Medical Director Requirements	TYPE II	x	x	x	x	x
2.9	Trauma Medical Director Responsibility and Authority	TYPE II	x	x	x	x	x
2.10	Trauma Program Manager Requirements	TYPE II	x	x	x	x	x
2.11	Trauma Program Manager Reporting Structure	Type II	x	x	x	x	x
2.12	Injury Prevention Program	TYPE II	x	x	x	x	x
2.13	Organ Procurement Program	TYPE II	x	x	x	x	x
2.14	Child Life Program	TYPE II				x	x
3 | Facilities and Equipment Resources							
3.1	Operating Room Availability	TYPE I	x	x	x	x	x
3.2	Additional Operating Room	TYPE II	x	x		x	x
3.3	Operating Room for Orthopaedic Trauma Care	TYPE II	x	x	x	x	x
3.4	Blood Products	TYPE I	x	x	x	x	x
3.5	Medical Imaging	TYPE I	x	x	x	x	x
3.6	Remote Access to Radiographic Imaging	TYPE II	x	x		x	x
3.7	Cerebral Monitoring Equipment	TYPE I	x	x	x*	x	x
3.8	Cardiopulmonary Bypass Equipment	TYPE II	x	x		x	x

Standard #	Standard Name	Type	LI	LII	LIII (LIII-N)*	PTCI	PTCII
4 | Personnel and Services							
4.1	Trauma Surgeon Requirements	TYPE II	x	x	x	x	x
4.2	Trauma Surgeon Coverage	TYPE I	x	x	x	x	x
4.3	Trauma Surgery Backup Call Schedule	TYPE II	x	x	x	x	x
4.4	Trauma Surgeon Presence in Operating Room	TYPE II	x	x	x	x	x
4.5	Specialty Liaisons to the Trauma Service	TYPE II	x	x	x	x	x
4.6	Emergency Department Director	TYPE I	x	x	x	x	x
4.7	Emergency Department Physician Requirements	TYPE II	x	x	x	x	x
4.8	Emergency Department Physician Coverage	TYPE I	x	x		x	x
4.9	Pediatric Critical Care Staffing	TYPE II				x	
4.10	Neurotrauma Care	TYPE I	x	x	x*	x	x
4.11	Orthopaedic Trauma Care	TYPE I	x	x	x	x	x
4.12	Specialized Orthopaedic Trauma Care	TYPE II		x		x	x
4.13	Anesthesia Services	TYPE I	x	x	x	x	x
4.14	Radiologist Access	TYPE I	x	x	x	x	x
4.15	Interventional Radiology Response for Hemorrhage Control	TYPE II	x	x		x	x
4.16	ICU Director	TYPE II	x	x	x	x	x
4.17	ICU Physician Coverage	TYPE I	x	x		x	x
4.18	Intensivist Staffing	TYPE II		x			
4.19	ICU Provider Coverage for Level III Trauma Centers	TYPE I			x		
4.20	ICU Nursing Staffing Requirement	TYPE II	x	x	x	x	x
4.21	Surgical Specialists Availability	TYPE I	x	x		x	x
4.22	Soft Tissue Coverage Expertise	TYPE I	x			x	
4.23	Craniofacial Expertise	TYPE I	x			x	
4.24	Replantation Services	TYPE II	x	x		x	x
4.25	Medical Specialists	TYPE II	x	x	x	x	x
4.26	Child Abuse (Nonaccidental Trauma) Physician	TYPE II				x	x
4.27	Allied Health Services	TYPE II	x	x	x	x	x
4.28	Renal Replacement Therapy Services	TYPE II	x	x	x	x	x
4.29	Advanced Practice Providers	TYPE II	x	x	x	x	x
4.30	Trauma Registry Staffing Requirements	TYPE II	x	x	x	x	x
4.31	Certified Abbreviated Injury Scale Specialist	TYPE II	x	x	x	x	x
4.32	Trauma Registry Courses	TYPE II	x	x	x	x	x

Standard #	Standard Name	Type	LI	LII	LIII (LIII-N)*	PTCI	PTCII
4.33	Trauma Registrar Continuing Education	TYPE II	x	x	x	x	x
4.34	Performance Improvement Staffing Requirements	TYPE II	x	x	x	x	x
4.35	Disaster Management and Emergency Preparedness Course	TYPE II	x			x	
5 | Patient Care: Expectations and Protocols							
5.1	Clinical Practice Guidelines	TYPE II	x	x	x	x	x
5.2	Trauma Surgeon and Emergency Medicine Physician Shared Responsibilities	TYPE II	x	x	x	x	x
5.3	Levels of Trauma Activation	TYPE II	x	x	x	x	x
5.4	Trauma Surgeon Response to Highest Level of Activation	Type I	x	x	x	x	x
5.5	Trauma Surgical Evaluation for Activations below the Highest Level	TYPE II	x	x	x	x	x
5.6	Care Protocols for the Injured Older Adult	TYPE II	x	x			
5.7	Assessment of Children for Nonaccidental Trauma	TYPE II	x	x	x	x	x
5.8	Massive Transfusion Protocol	TYPE I	x	x	x	x	x
5.9	Anticoagulation Reversal Protocol	TYPE II	x	x	x	x	x
5.10	Pediatric Readiness	Type II	x	x	x	x	x
5.11	Emergency Airway Management	TYPE I	x	x	x	x	x
5.12	Transfer Protocols	TYPE II	x	x	x	x	x
5.13	Decision to Transfer	TYPE II	x	x	x	x	x
5.14	Transfer Communication	TYPE II	x	x	x	x	x
5.15	Trauma Diversion Protocol	TYPE II	x	x	x	x	x
5.16	Trauma Diversion Hours	TYPE II	x	x	x	x	x
5.17	Neurosurgeon Response	TYPE II	x	x	x*	x	x
5.18	Neurotrauma Plan of Care for Level III Trauma Centers	TYPE II			x		
5.19	Neurotrauma Contingency Plan	TYPE II	x	x	x*	x	x
5.20	Treatment Guidelines for Orthopaedic Injuries	TYPE II	x	x	x	x	x
5.21	Orthopaedic Surgeon Response	TYPE II	x	x	x	x	x
5.22	Operating Room Scheduling Policy	Type II	x	x	x	x	x
5.23	Surgical Evaluation of ICU Patients	TYPE II	x	x	x	x	x
5.24	Trauma Surgeon Responsibility for ICU Patients	TYPE II	x	x	x	x	x
5.25	Communication of Critical Imaging Results	TYPE II	x	x	x	x	x

Standard #	Standard Name	Type	LI	LII	LIII (LIII-N)*	PTCI	PTCII
5.26	Timely CT Scan Reporting	TYPE II	x	x	x	x	x
5.27	Rehabilitation Services during Acute Phase of Care	TYPE II	x	x	x	x	x
5.28	Rehabilitation and Discharge Planning	TYPE II	x	x	x	x	x
5.29	Mental Health Screening	TYPE II	x	x	x	x	x
5.30	Alcohol Misuse Screening	TYPE II	x	x	x	x	x
5.31	Alcohol Misuse Intervention	TYPE II	x	x	x	x	x
6 | Data Surveillance and Systems							
6.1	Data Quality Plan	TYPE II	x	x	x	x	x
6.2	Trauma Registry Patient Record Completion	TYPE II	x	x	x	x	x
6.3	Trauma Registry Data Collection and Submission	TYPE II	x	x	x	x	x
7 | Performance Improvement and Patient Safety							
7.1	Trauma PIPS Program	TYPE II	x	x	x	x	x
7.2	PIPS Plan	TYPE II	x	x	x	x	x
7.3	Documented Effectiveness of the PIPS Program	TYPE II	x	x	x	x	x
7.4	Participation in Risk-Adjusted Benchmarking Programs	TYPE II	x	x	x	x	x
7.5	Physician Participation in Prehospital Performance Improvement	TYPE II	x	x	x	x	x
7.6	Trauma Multidisciplinary PIPS Committee Attendance	TYPE II	x	x	x	x	x
7.7	Trauma Mortality Review	TYPE II	x	x	x	x	x
7.8	Nonsurgical Trauma Admissions Review	TYPE II	x	x	x	x	x
7.9	Trauma Diversions Review	TYPE II	x	x	x	x	x
7.10	Prehospital Care Feedback	TYPE II	x	x	x	x	x
8 | Education: Professional and Community Outreach							
8.1	Public and Professional Trauma Education	TYPE II	x	x	x	x	x
8.2	Nursing Trauma Orientation and Education	TYPE II	x	x	x	x	x
8.3	Prehospital Provider Training	TYPE II	x	x	x	x	x
8.4	General Surgery Resident Education	TYPE II	x			x	
8.5	General Surgery Senior Resident Rotations	TYPE II	x			x	
8.6	General Surgery Resident Coverage	TYPE II	x			x	
9 | Research							
9.1	Research and Scholarly Activities	TYPE II	x			x	

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