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CHAPTER 333

OREGON HEALTH AUTHORITY

PUBLIC HEALTH DIVISION

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FILING CAPTION: Updated Field Triage Guidelines and Trauma Team Activation Criteria

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RULES:

333-200-0010, 333-200-0080, 333-200-0265

AMEND: 333-200-0010

NOTICE FILED DATE: 12/18/2023

RULE SUMMARY: Amend 333-200-0010

The field triage criteria (Exhibit 2) are amended to align with the revised 2021 National Guideline for Field Triage of Injured Patients, Recommendations of the National Expert Panel on Field Triage. Exhibits 4 and 5 are not being amended but are included for reference. Amendments are only in Exhibit 2 and not in the rule text.

CHANGES TO RULE:

333-200-0010

Definitions ¶¶

As used in OAR 333-200-0000 through 333-200-0295:¶¶

(1) "Area Trauma Advisory Board" (ATAB) means an advisory group appointed by the Authority for each established trauma area to represent providers of trauma care and members of the public.¶¶

(2) "Authority" means the Oregon Health Authority.¶¶

(3) "Categorization" means a process for determining the level of a hospital's trauma care capability and commitment which allows any hospital which meets criteria to receive trauma patients.¶¶

(4) "Communications coverage area" means a geographic region representing a primary radio service area for emergency medical communications. When primary service areas substantially overlap they will be considered as one coverage area.¶¶

(5) "Coordinated care organization" has the meaning given that term in OAR 410-141-0000.¶¶

(6) "Designation" means a competitive process for determining the level of a hospital's trauma care capability and commitment, allowing the Authority to select a limited number of hospitals which meet criteria to receive trauma patients.¶¶

(7) "Emergency medical condition" means a medical condition that manifests itself by symptoms of sufficient severity that a prudent layperson possessing an average knowledge of health and medicine would reasonably expect that failure to receive immediate medical attention would place the health of a person, or a fetus, in the

case of a pregnant woman, in serious jeopardy.¶

(8) "Emergency Medical Responder" means a person who is licensed by the Authority as an Emergency Medical Responder.¶

(9) "Emergency Medical Services provider" (EMS provider) means a person who is licensed by the Authority as an Emergency Medical Responder or an Emergency Medical Technician.¶

(10) "Emergency Medical Technician" (EMT) means a person who is licensed by the Authority as an Emergency Medical Technician.¶

(11) "Glasgow Coma Scale" (GCS) means an internationally recognized scoring system for the assessment of head injury severity and degree of coma.¶

(12) "Hospital" has the meaning set forth in ORS 442.015(15).¶

(13) "Injury Severity Score" (ISS) means a method for quantifying the degree of anatomic injury. As described in Baker, S.P., O'Neill B., Haddon W. Jr., et al: The Injury Severity Score, Journal of Trauma, 1974, 14: 187-196.¶

(14) "Level I (regional) trauma hospital" means a hospital which is categorized or designated by the Authority as having met the trauma hospital resource standards for a Level I hospital, as described in Exhibit 4. Level I hospitals manage severely injured patients, provide trauma related medical education and conduct research in trauma care.¶

(15) "Level II (area) trauma hospital" means a hospital categorized or designated by the Authority as having met the trauma hospital resource standards for a Level II hospital, as described in Exhibit 4. Level II hospitals manage the severely injured patient.¶

(16) "Level III (local) trauma hospital" means a hospital categorized or designated by the Authority as having met the trauma hospital resource standards for a Level III hospital, as described in Exhibit 4. Level III hospitals provide resuscitation, stabilization, and assessment of the severely injured patient and provide either treatment or transfer the patient to a higher level trauma system hospital as described in Exhibit 5.¶

(17) "Level IV (community) trauma hospital" means a hospital categorized or designated by the Authority as having met the hospital resource standards for a Level IV hospital, as described in Exhibit 4. Level IV hospitals provide resuscitation and stabilization of the severely injured patient prior to transferring the patient to a higher level trauma system hospital.¶

(18) "Managed health care organization" means a health care provider or a group or organization of medical service providers that provide for the delivery of an agreed upon set of medical or referral services for an enrolled group of individuals and families in a defined geographic area at a fixed periodic rate paid per enrolled individual or family.¶

(19) "Medical direction" means physician responsibility for the operation and evaluation of prehospital emergency medical care performed by emergency care providers.¶

(20) "Off-line medical direction" means the direction provided by a physician to prehospital emergency medical care providers through communications such as written protocols, standing orders, education and quality improvement reviews.¶

(21) "On-line medical direction" means the direction provided by a physician to prehospital emergency medical care providers through radio, telephone, or other real time communication.¶

(22) "Oregon Trauma Registry" means the trauma data collection and analysis system operated by the Authority.¶

(23) "Prehospital response time" means the length of time between the notification of a provider and the arrival of that provider's emergency medical service unit(s) at the incident scene.¶

(24) "Stabilization" means that, within reasonable medical probability, no material deterioration of an emergency medical condition is likely to occur.¶

(25) "State Trauma Advisory Board" (STAB) means an advisory group appointed by the Authority to represent providers of trauma care.¶

(26) "Trauma patient" means a person who at any time meets field triage criteria for inclusion in the Oregon Trauma System, as described in Exhibit 2 of these rules.¶

(27) "Trauma system hospital" means a hospital categorized or designated by the Authority to receive and provide services to trauma patients.¶

(28) "Trauma system plan" means a document which describes the policies, procedures and protocols for a comprehensive system of prevention and management of traumatic injuries.¶

(29) "Triage criteria" means the parameters established to identify trauma patients for treatment in accordance with the trauma system plan. These criteria are set forth in Exhibit 2.¶

[ED. NOTE: To view tables referenced in rule text, click here to view rule.]

Statutory/Other Authority: ORS 431A.065

Statutes/Other Implemented: ORS 431A.065

RULE ATTACHMENTS MAY NOT SHOW CHANGES. PLEASE CONTACT AGENCY REGARDING CHANGES.

EXHIBIT 2
OAR chapter 333, division 200

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
<ul style="list-style-type: none">• Penetrating injuries to head, neck, torso, and proximal extremities• Skull deformity, suspected skull fracture• Suspected spinal injury with new motor or sensory loss• Chest wall instability, deformity, or suspected flail chest• Suspected pelvic fracture• Suspected fracture of two or more proximal long bones (humerus or femur)• Crushed, degloved, mangled, or pulseless extremity• Amputation proximal to wrist or ankle• Active bleeding requiring a tourniquet or wound packing with continuous pressure	<p>All Patients</p> <ul style="list-style-type: none">• Unable to follow commands (motor GCS less than 6)• RR less than 10 or greater than 29 breaths/min• Respiratory distress or need for respiratory support• Room-air pulse oximetry less than 90% <p>Age 0-9 years</p> <ul style="list-style-type: none">• SBP less than 70 mmHg + (2 x age years) <p>Age 10-64 years</p> <ul style="list-style-type: none">• SBP less than 90 mmHg OR• HR greater than SBP <p>Age 65 years or older</p> <ul style="list-style-type: none">• SBP less than 110 mmHg OR• HR greater than SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA

Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
<ul style="list-style-type: none">• High-Risk Auto Crash<ul style="list-style-type: none">- Partial or complete ejection- Significant intrusion (including roof)<ul style="list-style-type: none">▪ Greater than 12 inches occupant site OR▪ Greater than 18 inches any site OR▪ Need for extrication for entrapped patient- Death in passenger compartment- Child (Age 0-9) unrestrained or in unsecured child safety seat- Vehicle telemetry data consistent with severe injury• Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)• Pedestrian/bicycle rider thrown, run over, or with significant impact• Fall from height greater than 10 feet (all ages)	<p>Consider risk factors, including:</p> <ul style="list-style-type: none">• Low-level falls in young children (ages 5 years or younger) or older adults (ages 65 years or older) with significant head impact• Anticoagulant use• Suspicion of child abuse• Special, high-resource healthcare needs• Pregnancy greater than 20 weeks• Burns in conjunction with trauma• Children should be triaged preferentially to pediatric capable centers <p>If concerned, take to a trauma center</p>

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

EXHIBIT 4

OAR Chapter 333, Division 200

OREGON TRAUMA HOSPITAL RESOURCE STANDARDS

Acronym Legend:

ATLS	Advance Trauma Life Support®	OPO	Organ Procurement Organization
CME	Continuing Medical Education	PACU	Post Anesthesia Care Unit
CRNA	Certified Nurse Anesthetist	PIPS	Performance Improvement & Patient Safety
CT	Computed Tomography	PGY	Post Graduate Year
ICU	Intensive Care Unit	TBI	Traumatic Brain Injury
ISS	Injury Severity Score	TMD	Trauma Medical Director
MRI	Magnetic Resonance Imaging	TPM	Trauma Program Manager
NTDB	National Trauma Data Bank	TTA	Trauma Team Activation
NTDS	National Trauma Data Standard	MOC	Maintenance of Certification

R = Required standard for the applicable category
 ■ = Standard not required

Tag	Standard/Chapter	Level	Level	Level	Level
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
TRAUMA SYSTEMS					
1-1	Active engagement of Trauma Center and their healthcare providers	R	R	R	R
1-2	Regional Trauma System engagement with standardization, implementation and performance improvement and patient safety (PIPS)	R	R	R	R
1-3	State and Regional Trauma System development and improvement	R	R	R	R
TRAUMA CENTER DESCRIPTION and THEIR ROLES IN A TRAUMA SYSTEM					
2-1	Trauma center must have an integrated, concurrent PIPS program to ensure optimal care and continuous improvement in care	R	R	R	R
2-2	Surgical commitment	R	R	R	■
2-3	Trauma centers must be able to provide the necessary human and physical resources (physical plant and equipment) to properly administer acute care consistent with their level of categorization	R	R	R	R
2-4	Trauma center must admit at least 1,200 trauma patients yearly or have 240 admissions with an Injury Severity Score (ISS) of more than 15	R	■	■	■
2-5	Through the trauma PIPS program and hospital policy, the trauma medical director (TMD) must have responsibility and authority for determining each general	R	R	R	■

	surgeon's ability to participate on the trauma panel based on an annual review				
2-6-1	Qualified attending surgeons must participate in major therapeutic decisions, be present in the emergency department for major resuscitations, be present at operative procedures, and be actively involved in the critical care of all seriously injured patients	R	R		
2-6-2	A resident in postgraduate year 4 or 5 or an attending emergency physician who is part of the trauma team may be approved to begin resuscitation while awaiting the arrival of the attending surgeon but cannot independently fulfill the responsibilities of, or substitute for, the attending surgeon	R	R		
2-7	The presence of such a resident or attending emergency physician may allow the attending surgeon to take call from outside the hospital. In this case, local criteria and a PIPS program must be established to define conditions requiring the attending surgeon's immediate hospital presence	R	R		
2-8-1	It is expected that the surgeon will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time for the highest-level activation tracked from patient arrival for Level I and II trauma centers is 15 minutes, and 30 minutes for Level III trauma centers. The program must demonstrate that the surgeon's presence is in compliance at least 80 percent of the time	R	R	R	
2-8-2	It is expected that the physician (if available) or midlevel provider will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time is 30 minutes for the highest level of activation, tracked from patient arrival. The PIPS program must demonstrate that the physician's (if available) or midlevel provider's presence is in compliance at least 80 percent of the time				R
2-9	The attending surgeon's immediate (within 15 minutes) arrival for patients with appropriate activation criteria must be monitored by the hospital's trauma PIPS program	R	R		
2-10	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
2-11	A published backup call schedule for trauma surgery must be available	R	R		
2-12	Continuous general surgical coverage			R	
2-13-1	Well-defined transfer plans are essential			R	R
2-13-2	Collaborative treatment and transfer guidelines reflecting the Level IV facilities' capabilities must be developed and				R

	regularly reviewed, with input from higher-level trauma centers in the region				
2-14	24-hour emergency coverage by a physician or midlevel provider				R
2-15	The emergency department must be continuously available for resuscitation with coverage by a registered nurse and physician or midlevel provider, and it must have a physician director				R
2-16	Emergency department providers that are not board certified in emergency medicine must maintain current Advanced Trauma Life Support® (ATLS®) certification as part of their competencies in trauma				R
2-17	There is a TMD and trauma program manager (TPM) knowledgeable and involved in trauma care that work together with guidance from the trauma peer review committee to identify events, develop corrective action plans, and ensure methods of monitoring, reevaluation, and benchmarking.	R	R	R	R
2-18	Multidisciplinary trauma peer review committee must meet regularly, with required attendance of medical staff active in trauma resuscitation, to review systemic and care provider issues, as well as propose improvements to the care of the injured	R	R	R	R
2-19	PIPS program must have audit filters to review and improve pediatric and adult patient care	R	R	R	R
2-20	Because of the greater need for collaboration with receiving trauma centers, trauma center must actively participate in regional or statewide trauma system meetings and committees that provide oversight				R
2-21	Trauma center must be the local trauma authority and participate in the provision of training for prehospital and hospital-based providers				R
2-22	Facility must participate in regional disaster management plans and exercises	R	R	R	R
2-23	Any adult trauma center that annually admits to the hospital 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating their capability to care for injured children: trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R	R	
2-24	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R	R	
2-25	For adult trauma centers annually admitting to the hospital fewer than 100 injured children younger than 15 years, these resources are desirable. These hospitals,	R	R	R	

	however, must review the care of their injured children through their PIPS program				
PREHOSPITAL TRAUMA CARE					
3-1	The trauma program must participate in the training of prehospital personnel, the development and improvement of prehospital care protocols, and PIPS programs	R	R	R	R
3-2	The protocols that guide prehospital trauma care must be established by the trauma health care team, including surgeons, emergency physicians, medical directors for EMS agencies, and basic and advanced prehospital personnel	R	R	R	R
3-3	Rigorous multidisciplinary performance improvement is essential to evaluate overtriage and undertriage rates to attain the optimal goal of less than 5 percent undertriage	R	R	R	
3-4	The TMD must be involved in the development of the trauma center's bypass (diversion) protocol	R	R	R	
3-5	The trauma surgeon must be involved in the decision regarding bypass (diversion) each time the center goes on bypass	R	R	R	
3-6	The trauma center must not be on bypass (diversion) more than 5 percent of the time	R	R	R	
3-7	When a trauma center is required to go on bypass or to divert, the center must have a system to notify dispatch and EMS agencies. The center must do the following: <ul style="list-style-type: none"> • Prearrange alternative destinations with transfer agreements in place; • Notify other centers of divert or advisory status; - Maintain a divert log; and • Subject all diverts and advisories to performance improvement procedures 	R	R	R	R
INTERHOSPITAL TRANSFERS					
4-1	Direct physician-to-physician contact is essential	R	R	R	R
4-2	The decision to transfer an injured patient to a specialty care facility in an acute situation must be based solely on the needs of the patient and not on the requirements of the patient's specific provider network (for example, a health maintenance organization or a preferred provider organization) or the patient's ability to pay	R	R	R	
4-3-1	A very important aspect of interhospital transfer is an effective PIPS program that includes evaluating transport activities	R	R	R	R
4-3-2	Perform a PIPS review of all transfers out	R	R	R	R
HOSPITAL ORGANIZATION and the TRAUMA PROGRAM					

5-1-1	A decision by a hospital to become a trauma center requires the commitment of the institutional governing body and the medical staff	R	R	R	R
5-1-2	Documentation of administrative commitment is required from the governing body and the medical staff	R	R	R	R
5-2	This [administrative] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-3	The [medical staff] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-4	The trauma program must involve multiple disciplines and transcend normal departmental hierarchies	R	R	R	
5-5-1	The TMD must be a current board-certified general surgeon (or a general surgeon eligible for certification by the American Board of Surgery according to current requirements) or a general surgeon who is an American College of Surgeons Fellow with a special interest in trauma care and must participate in trauma call	R	R	R	
5-5-2	TMD is a physician practicing emergency medicine, responsible for coordinating the care of injured patients, verifies continuing medical education (CME) of personnel, and has oversight of the trauma quality improvement process. The TMD is clinically involved with trauma patient management and responsible for credentialing of trauma team members.				R
5-6	The TMD must be current in ATLS®	R	R	R	R
5-7	The TMD must maintain an appropriate level of trauma-related extramural CME (12 hours annually, or 36 hours in 3 years)	R	R		
5-8	Membership and active participation in regional or national trauma organizations are essential for the TMD in Level I and II trauma centers and are desirable for TMDs in Level III and IV facilities	R	R		
5-9	The TMD must have the authority to manage all aspects of trauma care	R	R	R	
5-10	The TMD must chair and attend a minimum of 50% of the multidisciplinary trauma peer review committee meetings.	R	R	R	
5-11-1	The TMD, in collaboration with TPM, must have the authority to correct deficiencies in trauma care and exclude from trauma call the trauma team members who do not meet specified criteria	R	R	R	
5-11-2	In addition, the TMD must perform an annual assessment of the trauma panel providers in the form of Ongoing Professional Practice Evaluation (OPPE) and Focused	R	R	R	

	Professional Practice Evaluation (FPPE) when indicated by findings of the PIPS process				
5-12	The TMD must have the responsibility and authority to ensure compliance with the above requirements and cannot direct more than one trauma center	R	R	R	
5-13	The criteria for a graded activation must be clearly defined by the trauma center, with the highest level of activation including the six required criteria listed in Exhibit 3.	R	R	R	R
5-14	Trauma centers highest level of activation requires the response of the full trauma team within 15 minutes of arrival of the patient, and the criteria should include physiologic criteria and some or several of the anatomic criteria	R	R		
5-15	Trauma centers team must be fully assembled within 30 minutes			R	R
5-16-1	Other potential criteria for trauma team activation that have been determined by the trauma program to be included in the various levels of trauma activation must be evaluated on an ongoing basis in the PIPS process to determine their positive predictive value in identifying patients who require the resources of the full trauma team.	R	R	R	R
5-16-2	The emergency physician may initially evaluate the limited-tier trauma patient, but the center must have a clearly defined response expectation for the trauma surgical evaluation of those patients requiring admission	R	R	R	
5-17-1	Seriously injured patients must be admitted to, or evaluated by, an identifiable surgical service staffed by credentialed trauma providers	R	R		
5-17-2	Injured patients may be admitted to individual surgeons, but the structure of the program must allow the TMD to have oversight authority for the care of these patients.			R	
5-18	Programs that admit more than 10% of injured patients to non-surgical services must review all non-surgical admissions through the trauma PIPS process	R	R	R	
5-19	Sufficient infrastructure and support to ensure adequate provision of care must be provided for this service	R	R		
5-20	In teaching facilities, the requirements of the residency review committees must be met	R	R		
5-21	There must be a method to identify the injured patients, monitor the provision of health care services, make periodic rounds, and hold formal and informal discussions with individual practitioners			R	
5-22	In addition to administrative ability, the TPM must show evidence of educational preparation and clinical experience in the care of injured patients	R	R	R	

5-23-1	There must be a minimum of 1.0 FTE TPM or Trauma Coordinator dedicated to the trauma program for trauma centers with ≥ 250 patients per year	R	R	R	R
5-23-2	A proportionate FTE Trauma Coordinator must be employed for trauma centers with < 250 patients per year			R	R
5-24-1	The TPM or Trauma Coordinator must show evidence of educational preparation, with a minimum of 16 hours per year (internal or external) of trauma-related continuing education and clinical experience in the care of injured patients	R	R	R	
5-24-2	The Trauma Coordinator must show evidence of educational preparation with a minimum of 4 hours per year (internal or external) of trauma-related continuing education and has completed an accredited course in the care of trauma patients				R
5-25	The trauma center's PIPS program must have a multidisciplinary trauma peer review committee chaired by the TMD	R	R	R	
CLINICAL FUNCTIONS – GENERAL SURGERY					
6-1	General surgeons caring for trauma patients must meet certain requirements, as described herein. These requirements may be considered to be in four categories: current board certification, clinical involvement, PIPS, and education.	R	R	R	
6-2	Board certification or eligible for certification by the American Board of Surgery according to current requirements or the alternate pathway as described by the American College of Surgeons (ACS) is essential for general surgeons who take trauma call.	R	R	R	
6-3	Non-board certified surgeons meet alternate criteria as described by ACS	R	R	R	
6-4	Trauma surgeons must have privileges in general surgery	R	R	R	
6-5	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
6-6-1	A published backup call schedule for trauma surgery must be available	R	R		
6-6-2	Maximum acceptable response time is 15 minutes for Level I and Level II; 30 minutes for Level III and Level IV. Response time is tracked from patient arrival rather than from notification or activation. 80% attendance threshold must be met for highest level of activation.	R	R	R	R
6-7-1	The attending surgeon is expected to be present in the operating room for all operations. A mechanism for documenting this presence is essential	R	R	R	
6-7-2	There must be a multidisciplinary trauma peer review committee chaired by the TMD with representatives	R	R	R	

	from: general surgery, orthopedic surgery, emergency medicine, ICU, and anesthesia – and for Level I and Level II trauma centers, neurosurgery and radiology. Liaisons from orthopedic surgery, emergency medicine, ICU, anesthesiology, neurosurgery, and radiology must attend a minimum of 50% of the meetings with appropriate documentation.				
6-8	Each member of the group of general surgeons must attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
6-9-1	All general surgeons on the trauma team must have successfully completed the ATLS® course at least once	R	R	R	R
6-9-2	The TMD must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME	R	R		
6-10-1	Trauma surgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board maintenance of certification (MOC) requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other general surgeons who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.	R	R	R	
6-10-2	General surgeons in a Level IV trauma hospital who take trauma call must be knowledgeable and current in the care of injured patients. This requirement must be met by the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – EMERGENCY MEDICINE					
7-1-1	The emergency department must have a designated emergency physician director supported by an appropriate number of additional physicians to ensure immediate care for injured patients	R	R	R	
7-1-2	The emergency department must have a designated emergency physician director supported by an				R

	appropriate number of additional providers to ensure immediate care for injured patients				
7-2	An emergency physician must be present in the department at all times	R	R		
7-3	Occasionally, it is necessary for the physician to leave the emergency department for short periods to address in-house emergencies. Such cases and their frequency must be reviewed by the PIPS program to ensure that this practice does not adversely affect the care of patients in the emergency department			R	
7-4	In institutions in which there are emergency medicine residency training programs, supervision must be provided by an in-house attending emergency physician 24 hours per day	R	R	R	
7-5	These roles and responsibilities must be defined, agreed on, and approved by the TMD	R	R	R	
7-6-1	Board certification or eligibility for certification by the appropriate emergency medicine board according to current requirements or the alternate pathway is essential for physicians staffing the emergency department and caring for trauma patients	R	R	R	
7-6-2	Non-board certified emergency medicine physicians meet alternate criteria as described by ACS	R	R	R	
7-7	Emergency physicians on the call panel must be regularly involved in the care of injured patients	R	R	R	
7-8	A representative from the emergency department must participate in the prehospital PIPS program	R	R	R	
7-9	A designated emergency physician liaison must be available to the TMD for PIPS issues that occur in the emergency department	R	R	R	
7-10	Emergency physicians must participate actively in the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
7-11	The emergency medicine liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee meetings	R	R	R	
7-12	The liaison from emergency medicine must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
7-13-1	Emergency physicians participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other emergency physicians who are not actively enrolled in the board MOC process, must meet this	R	R	R	

	requirement by documenting the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.				
7-13-2	Emergency physicians in Level IV trauma hospital who participate on the trauma team also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
7-14	All board-certified emergency physicians or those eligible for certification by an appropriate emergency medicine board according to current requirements must have successfully completed the ATLS course at least once	R	R	R	R
7-15	Physicians who are certified by boards other than emergency medicine who treat trauma patients in the emergency department are required to have current ATLS status	R	R	R	R
CLINICAL FUNCTIONS – NEUROSURGERY					
8-1	Neurotrauma is organized and led by a highly experienced and devoted neurosurgeon. If this surgeon is not the director of the neurosurgery service, a neurologic surgeon liaison must be designated	R	R		
8-2	Neurotrauma care must be continuously available for all TBI and spinal cord injury patients and must be present and respond within 30 minutes based on institutional-specific criteria	R	R		
8-3	A reliable, published neurotrauma call schedule must be provided with formally arranged contingency plans in case the capability of the neurosurgeon, hospital, or system to care for neurotrauma patients is overwhelmed	R	R		
8-4	The center must have a predefined and thoroughly developed neurotrauma diversion plan that is implemented when the neurosurgeon on call becomes encumbered. A predefined, thoroughly developed neurotrauma diversion plan must include the following: <ul style="list-style-type: none"> • Emergency medical services notification of neurosurgery advisory status/diversion; • A thorough review of each instance by the PIPS program; and 	R	R		

	<ul style="list-style-type: none"> Monitoring of the efficacy of the process by the PIPS program 				
8-5	<p>A formal, published contingency plan must be in place for times in which a neurosurgeon is encumbered upon the arrival of a neurotrauma case. The contingency plan must include the following:</p> <ul style="list-style-type: none"> A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the neurotrauma patient; Transfer agreements with a similar or higher-level verified trauma center; Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support; and Monitoring of the efficacy of the process by the PIPS program. 	R	R	R	
8-6-1	If one neurosurgeon covers two centers within the same limited geographic area, there must be a published backup schedule	R	R	R	
8-6-2	The performance improvement process must demonstrate that appropriate and timely care is provided	R	R	R	
8-7	There must be a plan approved by the TMD that determines which types of neurosurgical injuries may remain and which should be transferred			R	
8-8	Transfer agreements must exist with appropriate Level I and Level II trauma centers			R	
8-9	In all cases, whether patients are admitted or transferred, the care must be timely, appropriate, and monitored by the PIPS program			R	
8-10-1	Board certification or eligibility for certification by an appropriate neurosurgical board according to the current requirements or the alternate pathway is essential for neurosurgeons who take trauma call	R	R	R	
8-10-2	Alternate Criteria for Non-Board Certified Neurosurgeons	R	R	R	
8-11	Qualified neurosurgeons should be regularly involved in the care of patients with head and spinal cord injuries and must be credentialed by the hospital with general neurosurgical privileges	R	R		
8-12	The neurosurgery service must participate actively in the overall trauma PIPS program	R	R		
8-13-1	The neurosurgery liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee's meetings	R	R		
8-13-2	Centers with any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

8-14	The liaison representative from neurosurgery must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
8-15-1	Neurosurgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) Other neurosurgeons participating in trauma call who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program	R	R		
8-15-2	If a Level III trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).			R	
8-15-3	If a Level IV trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – ORTHOPEDIC SURGERY					
9-1	Because of their skills and training in the management of the acute and rehabilitation phases of musculoskeletal trauma, physical and occupational therapists and rehabilitation specialists are essential	R	R		

9-2	Operating rooms must be promptly available to allow for emergency operations on musculoskeletal injuries, such as open fracture debridement and stabilization, external fixator placement, and compartment decompression	R	R	R	
9-3	A system must be organized so that musculoskeletal trauma cases can be scheduled without undue delay and not at inappropriate hours that might conflict with more urgent surgery or other elective procedures	R	R		
9-4	There must be an orthopedic surgeon who is identified as the liaison to the trauma program	R	R	R	
9-5-1	Orthopedic care must be overseen by an individual who has completed a fellowship in orthopedic traumatology approved by the Orthopedic Trauma Association (OTA)	R			
9-5-2	In a pediatric trauma center this requirement may be met by having formal transfer agreements that specify which cases will be transferred for high level orthopedic oversight and assuring that all such transfers (or potential transfers) are reviewed as part of the performance improvement process.				
9-6	Orthopedic team members must have dedicated call at their institution or have an effective backup call system	R	R		
9-7	Orthopedic team members must be available in the trauma resuscitation area within 30 minutes after consultation has been requested by the surgical trauma team leader for multiply injured patients based on institution-specific criteria.	R	R		
9-8	The performance improvement process must ensure that care is timely and appropriate	R	R		
9-9	If the on-call orthopedic surgeon is unable to respond promptly, a backup consultant on-call surgeon must be available	R	R		
9-10-1	The design of this system is the responsibility of the orthopedic trauma liaison but must be approved by the TMD	R	R		
9-10-2	All necessary resources for modern musculoskeletal trauma care must be provided including instruments, equipment, and personnel, along with readily available operating rooms for musculoskeletal trauma procedures	R	R		
9-11	An orthopedic surgeon must be on call and promptly available 24 hours a day			R	
9-12	If the orthopedic surgeon is not dedicated to a single facility while on call, then a published backup schedule is required			R	
9-13	The PIPS process must review the appropriateness of the decision to transfer or retain major orthopedic trauma cases			R	

9-14	There must be protocols for the following orthopedic emergencies: 1) the type and severity of pelvic and acetabular fractures that will be treated at the institutions as well as those that will be transferred out for care; 2) the timing and sequence for the treatment of long bone fractures in multiply injured patients; and 3) the wash out time for open fractures. These protocols must be included as part of the PIPS process	R	R		
9-15	The orthopedic service must participate actively with the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
9-16	The orthopedic liaison to the trauma PIPS program must attend a minimum of 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
9-17-1	Board certification or eligibility for certification by an appropriate orthopedic board according to the current requirements, or the alternate pathway is essential for orthopedic surgeons who take trauma call	R	R	R	
9-17-2	Alternate Criteria for Non- Board Certified Orthopedic Surgeons	R	R	R	
9-18	The orthopedic surgical liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
9-19-1	Orthopedic surgeons participating on the trauma call panel must demonstrate evidence on ongoing trauma-related education. Staying current with board MOC is an acceptable method of ongoing trauma-related education. Other members of the orthopedic trauma team who are not actively enrolled in the board MOC process must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program	R	R	R	
9-19-2	If a Level IV trauma hospital provides this service, other members of the orthopedic trauma team must be knowledgeable about and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC				R

	requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				
PEDIATRIC TRAUMA CARE					
Trauma hospitals seeking categorization as a Level I or Level II Pediatric Trauma Center shall meet the following pediatric trauma care standards.					
10-1-1	Hospitals that pursue categorization as pediatric trauma centers must meet the same resource requirements as adult trauma centers, in addition to pediatric resource requirements.	R	R		
10-1-2	A Level I pediatric trauma center must annually admit 200 or more injured children younger than 15 years	R			
10-2	A Level II pediatric trauma center must annually admit 100 or more injured children younger than 15 years		R		
10-3	All Level I and II pediatric trauma centers must have a dedicated pediatric trauma program manager	R	R		
10-4	All Level I and II pediatric trauma centers must have a pediatric trauma registrar	R	R		
10-5	In a Level I pediatric trauma center, the pediatric trauma program manager must be a full-time position dedicated to the pediatric trauma service	R			
10-6	All pediatric trauma centers must have a pediatric trauma performance improvement and patient safety (PIPS) program	R	R		
10-7	In addition, all pediatric trauma centers must have the following programs: pediatric rehabilitation, child life and family support programs, pediatric social work, child protective services, pediatric injury prevention, community outreach, and education of health professionals and the general public in the care of pediatric trauma patients	R	R		
10-8	Level I and II pediatric trauma centers must have a mechanism in place to assess children for maltreatment	R	R		
10-9	Level I pediatric trauma centers must have identifiable pediatric trauma research	R			
10-10	The pediatric Level I center's research requirement is equivalent to that of adult Level I trauma centers	R			
10-11	In combined Level I adult and pediatric centers, half of the research requirement must be pediatric research	R			
10-12	A Level I pediatric trauma center must have at least two surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgery	R			
10-13	On staff, there must be one board-certified surgeon or one surgeon eligible for certification by an appropriate orthopedic board according to the current requirements	R			

	of that board who also has had pediatric fellowship training				
10-14	Additionally, there must be on staff at least one board-certified surgeon or one surgeon eligible for certification by an appropriate neurosurgical board according to current requirements of that board who also has had pediatric fellowship training	R			
10-15	There must be one additional board-certified orthopedic surgeon or surgeon eligible for certification by an appropriate orthopedic board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-16	There must be one additional board-certified neurosurgeon or surgeon eligible for certification by an appropriate neurosurgical board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-17	There must be two physicians who are board certified or eligible for certification in pediatric critical care medicine, according to current requirements in pediatric critical care medicine: or in pediatric surgery and surgical critical care by the American Board of Surgery	R			
10-18	There must be two physicians who are board certified or eligible for certification by an appropriate emergency medicine board according to current requirements in pediatric emergency medicine	R			
10-19	The pediatric intensive care unit must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-20	The pediatric section of the emergency department must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-21	In a Level II pediatric trauma center, there must be at least one pediatric surgeon who is board-certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgeon		R		
10-22	There must be one surgeon who is board-certified or eligible for certification by an appropriate orthopedic board identified with demonstrated interests and skills in pediatric trauma care		R		
10-23	There must be one surgeon who is board-certified or eligible for certification by an appropriate neurosurgical board identified with demonstrated interests and skills in pediatric trauma care		R		
10-24	In a Level I pediatric trauma center, the pediatric trauma medical director must be board certified or eligible for certification by the American Board of Surgery according	R			

	to current requirements for pediatric surgery or alternatively, a pediatric surgeon who is a Fellow of the American College of Surgeons with a special interest in pediatric trauma care, and must participate in trauma call				
10-25	In a Level II pediatric trauma center, the pediatric trauma medical director should be a board-certified pediatric surgeon or a surgeon eligible for certification by the American Board of Surgery according to current requirements for pediatric surgeons. This individual must be a board-certified general surgeon or a general surgeon eligible for certification by the American Board of Surgery according to current requirements qualified to serve on the pediatric trauma team as defined in the following paragraph		R		
10-26	When the number of pediatric surgeons on staff is too few to sustain the pediatric trauma panel, general surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements may serve on the pediatric trauma team. In this circumstance, they must be credentialed by the hospital to provide pediatric trauma care, be members of the adult trauma panel, and be approved by the pediatric trauma medical director	R	R		
10-27	At a minimum, a Level I pediatric trauma center must have continuous rotations in trauma surgery for senior residents (Clinical PGY 3–5) who are part of an Accreditation Council for Graduate Medical Education–accredited program	R			
10-28	At a minimum, these rotations should include residency programs in all the following specialties: general surgery, orthopedic surgery, emergency medicine, and neurosurgery. They may also include support of a pediatric surgical fellowship	R			
10-29	In Level I and II pediatric trauma centers, other specialists (in anesthesiology, neurosurgery, orthopedic surgery, emergency medicine, radiology, and rehabilitation) providing care to injured children who are not pediatric-trained providers also should have sufficient training and experience in pediatric trauma care and be knowledgeable about current management of pediatric trauma in their specialty. The program must make specialty-specific pediatric education available for these specialists	R	R		
10-30	An organized pediatric trauma service led by a pediatric trauma medical director must be present in Level I and II pediatric trauma centers	R	R		

10-31	The pediatric trauma service must maintain oversight of the patient's management while the patient is in the intensive care unit	R	R		
10-32	The trauma service should work collaboratively with the pediatric critical care providers, although all significant therapeutic decisions must be approved by the trauma service, and the service must be made aware of all significant clinical changes	R	R		
10-33	The surgical director of the pediatric intensive care unit must participate actively in the administration of the unit, as evidenced by the development of pathways and protocols for care of surgical patients in the intensive care unit and in unit-based performance improvement and should be board-certified in surgical critical care	R	R		
10-34-1	Pediatric surgeons or trauma surgeons with pediatric privileges must be included in all aspects of the care of injured children admitted to an intensive care unit	R	R		
10-34-2	Any adult trauma center that annually admits 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating its capability to care for the injured child	R	R		
10-34-3	The trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R		
10-34-4	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R		
10-34-5	For adult trauma centers admitting fewer than 100 injured children younger than 15 years per year, these resources are desirable. These hospitals, however, must review the care of all injured children through their PIPS programs	R	R		
10-35	Level I and II pediatric trauma centers must submit data to the National Trauma Data Bank® (NTDB®)	R	R		
10-36	There must be a trauma peer review committee chaired by the pediatric trauma medical director with participation by the pediatric /general surgeons and liaisons from pediatric/general surgery, orthopedic surgery, neurosurgery, emergency medicine, pediatric critical care medicine, anesthesia, and radiology to improve trauma care by reviewing selected deaths, complications, and sentinel events with the objectives of identification of issues and appropriate responses	R	R		
10-37	The aforementioned representatives must attend at least 50% of the trauma peer review meetings, and their attendance must be documented	R	R		

10-38	All pediatric and general surgeons on the pediatric trauma panel treating children must attend at least 50% of the trauma peer review meetings	R	R		
10-39	In level I and II pediatric trauma centers, the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) If the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine are not actively enrolled in the board MOC process, each must each accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external CME, of which at least 9 hours (in 3 years) must be related to clinical pediatric trauma care	R	R		
10-40	The other general surgeons, orthopedic surgeons, neurosurgeons, emergency medicine physicians, and critical care medicine physicians who take trauma call in Level I and II pediatric trauma centers also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 12 hours of CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).	R	R		

COLLABORATIVE CLINICAL SERVICES

For purposes of the following collaborative clinical service standards, a Level IV trauma center shall meet the prescribed standard if the Level IV provides the service. This is noted by the following symbol:



11-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for emergency operations	R	R	R	R
11-2-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for managing airway problems	R	R	R	R

11-2-2	Anesthesiology services must be present at full team activation within 15 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.	R	R		
11-2-3	Anesthesiology services must be present at full team activation within 30 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.			R	R
11-3-1	The anesthetic care of injured patients must be organized and supervised by an anesthesiologist who is highly experienced and committed to the care of injured patients and who serves as the designated liaison to the trauma program	R	R		
11-3-2	A qualified and dedicated physician anesthesiologist must be designated as the liaison to the trauma program	R	R		
11-3-3	A qualified anesthesiology provider must be designated as the liaison to the trauma program.			R	R
11-4	Anesthesia services must be available in-house 24 hours a day	R	R		
11-5	When anesthesiology senior residents or CRNAs are used to fulfill availability requirements, the attending anesthesiologist on call must be advised, available within 30 minutes at all times, and present for all operations	R	R		
11-6	The availability of anesthesia services and delays in airway control or operations must be documented by the hospital PIPS process	R	R	R	R
11-7	Anesthesiologists or CRNAs must be available within 30 minutes			R	R
11-8	Trauma centers without in-house anesthesia services must have protocols in place to ensure the timely arrival at the bedside by the anesthesia provider within 30 minutes of notification and request.			R	R
11-9	Under these circumstances, the presence of a physician skilled in emergency airway management must be documented			R	R
11-10	All anesthesiologists taking call must have successfully completed an anesthesia residency program	R	R		
11-11-1	The anesthesiologist liaison taking call must be currently board certified or eligible for certification by an appropriate anesthesia board according to current requirements in anesthesiology	R	R		
11-11-2	Board certification or eligibility for certification is essential for anesthesiologists who take trauma call.	R	R		
11-12	Trauma centers participation in the trauma PIPS program by the anesthesia liaison is essential	R	R	R	
11-13	The anesthesiology liaison to the trauma program must attend at least 50 percent of the multidisciplinary peer	R	R	R	

	review meetings, with documentation by the trauma PIPS program				
11-14	An operating room must be adequately staffed and available within 15 minutes	R	R		
11-15	If the first operating room is occupied, an adequately staffed additional room must be available	R	R		
11-16	Availability of the operating room personnel and timeliness of starting operations must be continuously evaluated by the trauma PIPS process and measures must be implemented to ensure optimal care	R	R		
11-17	An operating room must be adequately staffed and available within 30 minutes			R	R
11-18	If an on-call team is used, the availability of operating room personnel and the timeliness of starting operations must be continuously evaluated by the trauma PIPS process, and measures must be implemented to ensure optimal care			R	R
11-19	All trauma centers must have rapid fluid infusers, thermal control equipment for patients and resuscitation fluids, intraoperative radiologic capabilities, equipment for fracture fixation, and equipment for bronchoscopy and gastrointestinal endoscopy	R	R	R	
11-20	Trauma centers that provide neurosurgical services must have the necessary equipment to perform a craniotomy.	R	R	R	R
11-21	Must have cardiothoracic surgery capabilities available 24 hours per day and should have cardiopulmonary bypass equipment	R			
11-22	If cardiopulmonary bypass equipment is not immediately available, a contingency plan, including immediate transfer to an appropriate center and 100 percent performance improvement review of all patients transferred, must be in place	R	R		
11-23	Must have an operating microscope available 24 hours per day	R			
11-24	A PACU with qualified nurses must be available 24 hours per day to provide care for the patient if needed during the recovery phase	R	R	R	R
11-25	If this availability requirement is met with a team on call from outside the hospital, the availability of the PACU nurses and compliance with this requirement must be documented by the PIPS program	R	R	R	R
11-26	The PACU must have the necessary equipment to monitor and resuscitate patients, consistent with the process of care designated by the institution	R	R	R	R
11-27	The PIPS program, at a minimum, must address the need for pulse oximetry, end-tidal carbon dioxide detection,	R	R	R	R

	arterial pressure monitoring, pulmonary artery catheterization, patient rewarming, and intracranial pressure monitoring				
11-28	There must be policies designed to ensure that trauma patients who may require resuscitation and monitoring are accompanied by appropriately trained providers during transportation to, and while in, the radiology department	R	R	R	R
11-29	Conventional radiography must be available 24 hours per day	R	R	R	R
11-30	Computed tomography (CT) must be available 24 hours per day	R	R	R	
11-31	An in-house radiology technologist and CT technologist are required	R	R		
11-32	Qualified radiologists must be available within 30 minutes in person or by teleradiology for the interpretation of radiographs	R	R	R	
11-33	Qualified radiologists must be available within 30 minutes to perform complex imaging studies, or interventional procedures	R	R		
11-34	Diagnostic information must be communicated in a written or electronic form and in a timely manner	R	R	R	R
11-35	Critical information deemed to immediately affect patient care must be verbally communicated to the trauma team in a timely manner	R	R	R	R
11-36	The final report must accurately reflect the chronology and content of communications with the trauma team, including changes between the preliminary and final interpretations	R	R	R	R
11-37	Changes in interpretation between preliminary and final reports, as well as missed injuries, must be monitored through the PIPS program	R	R	R	R
11-38	A radiologist must be appointed as liaison to the trauma program	R	R		
11-39	The radiologist liaison must attend at least 50 percent of peer review meetings and should educate and guide the entire trauma team in the appropriate use of radiologic services	R	R		
11-40	Participation in the trauma PIPS program process by the radiology liaison is essential	R	R		
11-41	At a minimum, radiologists must be involved in protocol development and trend analysis that relate to diagnostic imaging	R	R		
11-42	There must be a mechanism in place to view radiographic imaging from referring hospitals within their catchment area	R	R		

11-43	Board certification or eligibility for certification by an appropriate radiology board according to current requirements is essential for radiologists who take trauma call	R	R		
11-44	Interventional radiologic procedures and sonography must be available 24 hours per day	R	R		
11-45	Magnetic resonance imaging (MRI) capability must be available 24 hours per day	R	R		
11-46	The MRI technologist may respond from outside the hospital; however, the PIPS program must document and review arrival within 1 hour of being called. This time should meet current clinical guidelines	R	R		
11-47	If the CT technologist takes call from outside the hospital, the PIPS program must document the technologist's time of arrival at the hospital			R	
11-48	A surgically directed ICU physician team must be led by a surgeon boarded in surgical critical care, and critically ill trauma patients should be cared for in a designated ICU	R			
11-49-1	A surgeon with current board certification in surgical critical care must be designated as the ICU director	R			
11-49-2	The ICU team may be staffed by critical care physicians from different specialties but must remain surgically directed as noted above	R			
11-50	The ICU must be staffed with a dedicated ICU physician team led by the ICU director	R			
11-51	Appropriately trained physicians must be available in-house within 15 minutes to provide care for the ICU patients 24 hours per day	R			
11-52	If the trauma attending provides coverage, a backup ICU attending must be identified and readily available	R			
11-53	A surgeon must serve as co-director or director of the ICU and be actively involved in, and responsible for, setting policies and administrative decisions related to trauma ICU patients		R	R	
11-54	The ICU director or co-director should be currently board certified or eligibility for certification in surgical critical care in a Level II trauma center. In Level II and III facilities, the ICU director or co-director must be a surgeon who is currently board certified or eligible for certification by the current standard requirements		R	R	
11-55	Physician coverage of critically ill trauma patients must be available within 15 minutes 24 hours per day for interventions by a credentialed provider		R		
11-56	Physician coverage of the ICU must be available within 30 minutes, with a formal plan in place for emergency coverage			R	R

11-57	The PIPS program must review all ICU admissions and transfers of ICU patients to ensure that appropriate patients are being selected to remain at the Level III and Level IV center vs. being transferred to a higher level of care			R	R
11-58	The trauma surgeon must retain responsibility for the patient and coordinate all therapeutic decisions	R	R	R	R
11-59	Many of the daily care requirements can be collaboratively managed by a dedicated ICU team, but the trauma surgeon must be kept informed and concur with major therapeutic and management decisions made by the ICU team	R	R	R	R
11-60-1	The PIPS program must document that timely and appropriate ICU care and coverage are being provided	R	R	R	R
11-60-2	The timely response of credentialed providers to the ICU must be continuously monitored as part of the PIPS program	R	R	R	R
11-61	There must be a designated ICU liaison to the trauma service	R	R	R	
11-62	This [ICU] liaison must attend at least 50 percent of the multidisciplinary peer review meetings, with documentation by the trauma PIPS program	R	R	R	
11-63	The ICU liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, or through an internal educational process based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-64	Other members of the ICU trauma team must be knowledgeable about, and current in, the care of injured patients. This requirement must be documented by the acquisition of 12 hours of trauma-related CME per year, on average, or through an internal educational process conducted by the trauma program and the ICU liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-65	Qualified critical care nurses must be available 24 hours per day to provide care for patients during the ICU phase	R	R	R	R
11-66	The patient-to-nurse ratio in the ICU must not exceed two to one	R	R	R	R

11-67	The ICU must have the necessary equipment to monitor and resuscitate patients	R	R	R	R
11-68	Intracranial pressure monitoring equipment must be available in Level I and II trauma centers and in Level III and Level IV trauma centers with neurosurgical coverage that admit neurotrauma patients	R	R	R	R
11-69	Trauma patients must not be admitted or transferred by a primary care physician without the knowledge and consent of the trauma service, and the PIPS program should monitor adherence to this guideline			R	R
11-70	Facilities are prepared to manage the most complex trauma patients and must have available a full spectrum of surgical specialists, including specialists in orthopedic surgery, neurosurgery, cardiac surgery, thoracic surgery, vascular surgery, hand surgery, microvascular surgery, plastic surgery, obstetric and gynecologic surgery, ophthalmology, otolaryngology, and urology	R			
11-71	Must have the surgical specialists described (above) for Level I trauma centers and should provide cardiac surgery		R		
11-72-1	Must have the availability and commitment of orthopedic surgeons			R	
11-72-2	For all patients being transferred for specialty care, such as burn care, microvascular surgery, cardiopulmonary bypass capability, complex ophthalmologic surgery, or high-complexity pelvic fractures, agreements with a similar or higher-qualified verified trauma center should be in place. If this approach is used, a clear plan for expeditious critical care transport, follow-up, and performance monitoring is required. If complex cases are being transferred out, a contingency plan should be in place and must include the following: <ul style="list-style-type: none"> • A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the patient. • Transfer agreements with similar or higher-verified trauma centers. • Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support. • Monitoring of the efficacy of the process by the PIPS programs. 	R	R	R	R
11-73	Medical specialists on staff must include specialists in cardiology, internal medicine, gastroenterology, infectious disease, pulmonary medicine, and nephrology and their respective support teams (for example,	R	R		

	respiratory therapy, a dialysis team, and nutrition support)				
11-74	Internal medicine specialists must be available on the medical staff			R	
11-75	A respiratory therapist must be available in the hospital 24 hours per day	R	R		
11-76	There must be a respiratory therapist on call 24 hours per day			R	
11-77	Acute hemodialysis must be available	R	R		
11-78	Trauma centers that do not have dialysis capabilities must have a transfer agreement in place			R	
11-79	Nutrition support services must be available	R	R		
11-80	Laboratory services must be available 24 hours per day for the standard analyses of blood, urine, and other body fluids, including microsampling when appropriate	R	R	R	R
11-81	The blood bank must be capable of blood typing and cross-matching	R	R	R	R
11-82	The blood bank must have an adequate in-house supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients	R	R		
11-83	The blood bank must have an adequate supply of packed red blood cells and fresh frozen plasma available within 15 minutes			R	R
11-84	Must have a massive transfusion protocol developed collaboratively between the trauma service and the blood bank	R	R	R	R
11-85	Coagulation studies, blood gas analysis, and microbiology studies must be available 24 hours per day	R	R	R	R
11-86	Advanced practitioners who participate in the initial evaluation of trauma patients must demonstrate current verification as an ATLS® provider	R	R	R	R
11-87-1	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners, as witnessed by an annual review by the TMD	R	R		
11-87-2	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners.			R	R
REHABILITATION					
12-1	Rehabilitation services must be available within the hospital's physical facilities or as a freestanding rehabilitation hospital, in which case the hospital must have transfer agreements	R	R		
12-2	Rehabilitation consultation services, occupational therapy, speech therapy, physical therapy, and social services must be available	R	R		

12-3	Physical therapy must be provided	R	R	R	
12-4	Social services must be provided	R	R	R	
12-5	Occupational therapy must be provided	R	R		
12-6	Speech therapy must be provided	R	R		
12-7	The following services must be available during the acute phase of care, including intensive care: physical therapy, social services, occupational therapy and speech therapy	R	R		
GUIDELINES FOR THE OPERATION of BURN CENTERS					
14-1	Centers that refer burn patients to a designated burn center must have in place written transfer agreements with the referral burn center	R	R	R	R
TRAUMA REGISTRY					
15-1	Trauma registry data must be collected and analyzed	R	R	R	R
15-2	Data must be collected in compliance with the National Trauma Data Standard (NTDS) and submitted to the National Trauma Data Bank® (NTDB®) every year in a timely fashion so that they can be aggregated and analyzed at the national level	R	R	R	
15-3	The trauma registry is essential to PIPS program and must be used to support the PIPS process	R	R	R	R
15-4	Findings must be used to identify injury prevention priorities that are appropriate for local implementation	R	R	R	R
15-5	Trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
15-6	Trauma registries should be concurrent. At a minimum, 80 percent of cases must be entered within 60 days of discharge	R	R	R	R
15-7	The Trauma Registrar must attend or have previously attended two courses within 12 months of being hired: (1) the American Trauma Society's Trauma Registrar Course or equivalent provided by a state trauma program; and (2) the Association of the Advancement of Automotive Medicine's Injury Scaling Course or an equivalent local course.	R	R	R	R
15-8	The trauma program must ensure that appropriate measures are in place to meet the confidentiality requirements of the data	R	R	R	R
15-9-1	One full-time equivalent employee dedicated to the registry must be available to process the data capturing the NTDS data set for every 500 admitted trauma patients annually	R	R		
15-9-2	A proportionate FTE must be employed for hospitals with less than 500 admitted trauma patients annually			R	R
15-10	Strategies for monitoring data validity are essential	R	R	R	R
PERFORMANCE IMPROVEMENT AND PATIENT SAFETY (PIPS)					

16-1-1	Trauma centers must have a PIPS program that includes a comprehensive written plan outlining the configuration and identifying both adequate personnel to implement that plan and an operational data management system	R	R	R	
16-1-2	The PIPS program must be supported by the collection and analysis of trauma registry data to identify opportunities for improvement	R	R	R	R
16-1-3	The processes of event identification and levels of review must result in the development of corrective action plans, and methods of monitoring, reevaluation, and benchmarking must be present	R	R	R	R
16-2-1	Problem resolution, outcome improvements, and assurance of safety (“loop closure”) must be readily identifiable through methods of monitoring, reevaluation, benchmarking, and documentation	R	R	R	
16-2-2	Peer review must occur at regular intervals to ensure that the volume of cases is reviewed in a timely fashion.	R	R	R	R
16-3-1	The trauma PIPS program must integrate with the hospital quality and patient safety effort and have a clearly defined reporting structure and method for provision of feedback	R	R	R	
16-3-2	The trauma PIPS program is endorsed by the hospital governing body and is empowered to address events that involve multiple disciplines.	R	R	R	R
16-3-3	There must be documented, adequate administrative support to ensure evaluation of all aspects of trauma care	R	R	R	R
16-3-4	The TMD and TPM must have the authority and be empowered by the hospital governing body to lead the program	R	R	R	R
16-3-5	The TMD must have sufficient authority to set the qualifications for the trauma service members, including individuals in specialties that are routinely involved with the care of the trauma patient	R	R	R	
16-3-6	The TMD must have authority to recommend changes for the trauma panel based on performance review	R	R	R	
16-3-7	The peer review committee must be chaired by the TMD	R	R	R	
16-3-8	Representatives from general surgery, emergency medicine, orthopedics, and anesthesiology, critical care—and for Level I and II centers, neurosurgery, and radiology—actively participate in the trauma PIPS program and attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
16-3-9	Any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

16-3-10	The TMD, TPM, and liaisons in emergency medicine, orthopedics, and neurosurgery must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related education (CME or CE, as appropriate to the discipline), if not board eligible or board certified.	R	R		
16-3-11	The liaison in critical care must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related CME or through an internal educational process based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.	R	R		
16-3-12	The trauma center must demonstrate that all trauma patients can be identified for review	R	R	R	R
16-3-13	The trauma registry must submit the required data elements to the NTDB	R	R	R	
16-3-14	The trauma PIPS program must be supported by a registry and a reliable method of concurrent data collection that consistently obtains information necessary to identify opportunities for improvement	R	R	R	R
16-3-15	All trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-4	A trauma program must use clinical practice guidelines, protocols, and algorithms derived from evidenced-based validated resources in order to achieve the goal of using a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-5	All process and outcome measures must be documented within the trauma PIPS program's written plan and reviewed and updated at least annually	R	R	R	R
16-6-1	All trauma-related mortalities must be systematically reviewed and those mortalities with opportunities for improvement identified for peer review. 1. Total trauma-related mortality rates. Outcome measures for total, pediatric (younger than 15 years), and geriatric (older than 64 years) trauma encounters should be categorized as follows: a) DOA (pronounced dead on arrival with no additional resuscitation efforts initiated in the emergency department); b. DIED (died in the emergency department despite resuscitation efforts); c. In-hospital (including operating room). 2. Mortality rates by Injury Severity Scale (ISS) subgroups	R	R	R	
16-6-2	Trauma surgeon response to the emergency department for highest level of activation must be monitored, documented and reviewed	R	R	R	R

16-6-3	Criteria for all levels of trauma team activation (TTA) must be defined and reviewed annually	R	R	R	R
16-6-4	All TTAs must be categorized by the level of response and quantified by number and percentage	R	R	R	R
16-6-5	Trauma surgeon response time to other levels of TTA, and for back-up call response, should be monitored, documented and reviewed	R	R	R	
16-6-6	Response parameters for consultants addressing time-critical injuries (for example, epidural hematoma, open fractures, and hemodynamically unstable pelvic fractures) must be determined and monitored	R	R	R	
16-7-1	Rates of undertriage and overtriage must be monitored and reviewed quarterly	R	R	R	
16-7-2	Trauma centers admitting at least 100 pediatric trauma patients (≤ 14 years) annually require a pediatric-specific trauma PIPS program. Trauma centers admitting less than 100 pediatric trauma patients annually must review each case for timeliness and appropriateness of care	R	R		
16-7-3	All trauma patients who are diverted or transferred during the acute phase of hospitalization to another trauma center, acute care hospital, or specialty hospital (for example, burn center, reimplantation center, or pediatric trauma center) or patients requiring cardiopulmonary bypass or when specialty personnel are unavailable must be subjected to individual case review to determine the rationale for transfer, appropriateness of care, and opportunities for improvement. Follow-up from the center to which the patient was transferred should be obtained as part of the case review.	R	R	R	R
16-7-4	Instances in which the emergency department is left uncovered must be reviewed for timeliness of Emergency physician's response and appropriateness of care			R	
16-7-5	Trauma center diversion-bypass hours must be routinely monitored, documented, and reported, including the reason for initiating the diversion policy, and must not exceed 5 percent.	R	R	R	
16-7-6	All cases with neurologic injury must be monitored, and any case not transferred to higher level of care is subject to case review for timeliness of response and appropriateness of care			R	
16-7-7	<ul style="list-style-type: none"> • In-house anesthesia service (emergency department, intensive care unit, floor, and postanesthesia care unit) must be available for the care of trauma patients • Operating room delays involving trauma patients because of lack of anesthesia support services must be identified and reviewed to determine the reason for 	R	R	R	

	delay, adverse outcomes, and opportunities for improvement.				
16-7-8	Delay in operating room availability must be routinely monitored. Any case that is associated with a significant delay or adverse outcome must be reviewed for reasons for delay and opportunities for improvement.	R	R	R	
16-7-9	Response times of operating room and postanesthesia care unit personnel when responding from outside the trauma center must be routinely monitored.	R	R	R	
16-7-10	Rate of change in interpretation of radiologic studies should be categorized by RADPEER or similar criteria (describe process/scoring metric used).	R	R	R	
16-7-11	Response times of computed tomography technologist (30 minutes)/magnetic resonance imaging (60 minutes) technologist/interventional radiology team (30 minutes) when responding from outside the trauma center	R	R	R	
16-8	Transfers to a higher level of care within the institution	R	R	R	R
16-9-1	Solid organ donation rate	R	R	R	
16-9-2	The percentage of completed registry records within two months of discharge should be determined.	R	R	R	R
16-9-3	Multidisciplinary trauma peer review committee attendance	R	R	R	
16-9-4	Must admit at least 1,200 trauma patients yearly or have 240 admissions with an ISS of more than 15	R			
16-10	Sufficient mechanisms must be available to identify events for review by the trauma PIPS program	R	R	R	R
16-11	Once an event is identified, the trauma PIPS program must be able to verify and validate that event	R	R	R	R
16-12	There must be a process to address trauma program operational events	R	R	R	
16-13	Documentation (minutes) reflects the review of operational events and, when appropriate, the analysis and proposed corrective actions	R	R	R	
16-14-1	Mortality data, adverse events and problem trends, and selected cases involving multiple specialties must undergo multidisciplinary trauma peer review	R	R	R	
16-14-2	This effort may be accomplished in a variety of formats but must involve the participation and leadership of the TMD; the group of general surgeons on the call panel; and the liaisons from emergency medicine, orthopedics, neurosurgery, anesthesia, critical care, and radiology	R	R	R	
16-15	Each member of the committee must attend at least 50 percent of all multidisciplinary trauma peer review committee meetings	R	R	R	
16-16	When general surgeons cannot attend the multidisciplinary trauma peer review meeting, the TMD	R	R	R	

	must ensure that they receive and acknowledge the receipt of critical information generated at the multidisciplinary peer review meeting to close the loop				
16-17	The multidisciplinary trauma peer review committee must systematically review mortalities, significant complications, and process variances associated with unanticipated outcomes and determine opportunities for improvement	R	R	R	
16-18	When an opportunity for improvement is identified, appropriate corrective actions to mitigate or prevent similar future adverse events must be developed, implemented, and clearly documented by the trauma PIPS program	R	R	R	
16-19	An effective performance improvement program demonstrates through clear documentation that identified opportunities for improvement lead to specific interventions that result in an alteration in conditions such that similar adverse events are less likely to occur	R	R	R	
OUTREACH AND EDUCATION					
17-1	Engage in public and professional education	R	R	R	R
17-2	Trauma centers must provide some means of referral and access to trauma center resources	R	R		
17-3	Must have continuous rotations in trauma surgery for senior residents (Clinical PGY 4–5) that are part of an Accreditation Council for Graduate Medical Education–accredited program. For pediatric Level I centers, the continuous rotation for surgical residents is extended to include clinical PGY 3	R			
17-4-1	The hospital must provide a mechanism to offer trauma-related education to nurses involved in trauma care	R	R	R	
17-4-2	Resuscitation nurses must take initial 16 hour accredited course in the care of trauma patients followed by recertification or 4 hours/year of trauma-related continuing education	R	R	R	R
17-4-3	The successful completion of ATLS® course, at least once, is required for all general surgeons, emergency physicians and midlevel providers on the trauma team	R	R	R	R
17-4-4	The TD and the liaison representative from neurosurgery, orthopedic surgery, and emergency medicine must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, if not board eligible or board certified.	R	R		
17-4-5	The liaison representative from critical care must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, or through an internal educational process conducted by the trauma program	R	R		

	based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.				
17-4-6	Other members of the general surgery, neurosurgery, orthopedic surgery, emergency medicine and critical care specialties who take trauma call must also be knowledgeable and current in the care of injured patients.	R	R		
PREVENTION					
18-1	Trauma centers must have an organized and effective approach to injury prevention and must prioritize those efforts based on local trauma registry and epidemiologic data	R	R	R	R
18-2-1	Each trauma center must have someone in a leadership position that has injury prevention as part of his or her job description	R	R	R	R
18-2-2	This individual must be a prevention coordinator (separate from the TPM) with a job description and salary support	R			
18-3	Universal screening for alcohol use must be performed for all injured patients and must be documented	R	R	R	R
18-4	All patients who have screened positive must receive an intervention by appropriately trained staff, and this intervention must be documented	R	R		
18-5	At least two programs that address one of the major causes of injury in the community must be implemented	R	R		
18-6	A trauma center's prevention program must include and track partnerships with other community organizations	R	R		
TRAUMA RESEARCH AND SCHOLARSHIP					
19-1	A program must have 20 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period at a minimum	R			
19-2	These publications must result from work related to the trauma center or the trauma system in which the trauma center participates	R			
19-3	Of the 20 articles, at least one must be authored or co-authored by members of the general surgery trauma team	R			
19-4-1	Additionally, at least one article each from three of the following disciplines is required: basic sciences, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing	R			
19-4-2	A pediatric Level I center's research requirement is equivalent to that of adult Level 1 trauma centers	R			

19-4-3	In combined Level I adult and Level I pediatric centers, half of the research requirement must be pediatric research	R			
19-7	<p>In the alternate method, a Level I program must have the following: a) A program must have 10 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period. These articles must result from work related to the trauma center or the trauma system in which the trauma center participates. Of the 10 articles, at least one must be authored or co-authored by members of the general surgery trauma team, and at least one article each from three of the following disciplines is required: basic sciences as related to injury, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/ maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing. Trauma-related articles authored by members of other disciplines or work done in collaboration with other trauma centers and participation in multicenter investigations may be included in the remainder.</p> <p>b) Of the following seven trauma-related scholarly activities, four must be demonstrated: • Evidence of leadership in major trauma organizations, which includes membership in trauma committees of any of the regional or national trauma organizations. • Demonstrated peer-reviewed funding for trauma research from a recognized government or private agency or organization. • Evidence of dissemination of knowledge that includes review articles, book chapters, technical documents, Web-based publications, videos, editorial comments, training manuals, and trauma-related educational materials or multicenter protocol development. • Display of scholarly application of knowledge as evidenced by case reports or reports of clinical series in journals included in MEDLINE. • Participation as a visiting professor or invited lecturer at national or regional trauma conferences. • Support of resident participation in mentoring scholarly activity, including laboratory experiences; clinical trials; resident trauma paper competitions at the state, regional, or national level; and other resident trauma presentations. • Mentorship of fellows, as evidenced by the development or maintenance of a recognized trauma, critical care, or acute care surgery fellowship</p>	R			
19-8	The administration must demonstrate support for the research program by, for example, providing basic laboratory space, sophisticated research equipment, advanced information systems, biostatistical support,	R			

	salary support for basic and translational scientists, or seed grants for less experienced faculty				
DISASTER PLANNING AND MANAGEMENT					
20-1	Trauma centers must meet the disaster-related requirements of OAR 333-515-0030	R	R	R	R
20-2	A surgeon or delegate from the trauma panel must be a member of the hospital's disaster committee	R	R	R	
20-3	Hospital drills that test the individual hospital's disaster plan must be conducted at least twice a year, including actual plan activations that can substitute for drills	R	R	R	R
20-4	All trauma centers must have a hospital disaster plan described in the hospital's policy and procedure manual or equivalent	R	R	R	R
SOLID ORGAN PROCUREMENT ACTIVITIES					
21-1	The trauma center must have an established relationship with a recognized OPO	R	R	R	
21-2-1	A written policy must be in place for triggering notification of the regional OPO	R	R	R	
21-2-2	Must review its solid organ donation rate annually	R	R	R	
21-3	Written protocols defining the clinical criteria and confirmatory tests for the diagnosis of brain death are required	R	R	R	R

EXHIBIT 5

OAR Chapter 333, Division 200

OREGON CRITERIA for CONSIDERATION of TRANSFER to a LEVEL I or II TRAUMA CENTER

HEAD AND CENTRAL NERVOUS SYSTEM

- Penetrating injuries or open fracture of the skull
- GCS < 14 or lateralizing neurologic signs (if no neurosurgical consultation is available.)
- Spinal fracture or spinal cord deficit
- Carotid or vertebral arterial injury

CHEST

- More than two unilateral rib fractures or bilateral rib fractures with pulmonary contusion (if no critical care consultation is available)
- Torn thoracic aorta or great vessel
- Cardiac injury or rupture
- Bilateral pulmonary contusion with Pao₂:Flo₂ ratio less than 200 (require protracted ventilation)

ABDOMEN AND PELVIS

- Major abdominal vascular injury
- Grade IV or V liver injuries requiring transfusion
- Unstable pelvic fracture requiring transfusion
- Complex pelvis/acetabulum fractures
- Open pelvic injury

MULTIPLE SYSTEM INJURY

- Significant head injury combined with significant face, chest, abdominal, or pelvic injury
- Significant torso injury with advanced comorbid disease (such as coronary artery disease, chronic obstructive pulmonary disease, type 1 diabetes mellitus, or immunosuppression)
- Burns with associated injuries
- Fracture or dislocation with loss of distal pulses

SECONDARY DETERIORATION (LATE SEQUELAE)

- Patients requiring long term ventilation
- Sepsis
- Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)
- Major tissue necrosis

AMEND: 333-200-0080

NOTICE FILED DATE: 12/18/2023

RULE SUMMARY: Amend 333-265-0080

The field triage criteria (Exhibit 2) are amended to align with the revised 2021 National Guideline for Field Triage of Injured Patients, Recommendations of the National Expert Panel on Field Triage. Trauma activation criteria in Exhibit 3 have been amended based on changes to the field triage criteria in Exhibit 2 and the American College of Surgeons, Resources for Optimal Care of the Injured Patient (2022 Standards). Exhibits 4 and 5 are not being amended but are included for reference.

CHANGES TO RULE:

333-200-0080

Standards for Area Trauma System Plans ¶

Area trauma system plans shall describe how each of the following standards are met or exceeded. Interpretation and implementation of the standards as set forth in this rule shall be in general accordance with the guidelines of the Resources for Optimal Care of the Injured Patient: Committee on Trauma, American College of Surgeons, 2014. For the purposes of section (4) of this rule, interpretation and implementation of standards shall be in general accordance with the National Guidelines for Field Triage of Injured Patients, Recommendations of the National Expert Panel on Field Triage, 2011; Centers for Disease Control and Prevention, MMWR, January 13, 2012, Vol. 61, No. 1:21. ¶

(1) Communications and Dispatch:¶

(a) System access: Residents and visitors in a communications coverage area shall be able to access emergency medical services by calling 9-1-1 as set forth in ORS 403.115;¶

(b) Dispatch response: Dispatchers for emergency medical care providers shall have protocols which include pre-arrival patient care instructions, and which require the dispatch of the appropriate level of available responding units (basic or advanced life support) based on medical need;¶

(c) Special Resources: All emergency medical services dispatchers shall maintain an up-to-date list of available law enforcement agencies, fire departments, air and ground ambulance services, quick response units that respond to an ill or injured person to provide initial emergency medical care prior to transportation by an ambulance and special responders for extrication, water rescue, hazardous material incidents and protocols for their use;¶

(d) Prehospital/Hospital: Ambulances shall have either a UHF or VHF radio that will provide reliable communications between the ambulance and central dispatch, the receiving hospital, and online medical direction. If the information has to be relayed through the dispatching agency, that agency shall be responsible to relay patient information to the hospital; and¶

(e) Training: There shall be training and certification standards for all tele-communicators that process telephone requests for or dispatch emergency care providers. The authorization to establish these standards is the responsibility of the Department of Public Safety Standards and Training in accordance with ORS 181.640.¶

(2) Responders and Prehospital Response Times:¶

(a) Ambulance Service Areas (ASAs): The existing ASAs shall be described as well as a summary of the ATAB's efforts to promote each county adopting an ASA plan in accordance with ORS 682.062;¶

(b) Prehospital response times: Trauma system patients shall receive prehospital emergency medical care within the following prehospital response time parameters 90 percent of the time:¶

(A) Urban area, an incorporated community of 50,000 or more population - 8 minutes;¶

(B) Suburban area, an area which is not urban, and which is contiguous to an urban community. It includes the area within a 10-mile radius of that community's center. It also includes areas beyond the 10-mile radius which are contiguous to the urban community and have a population density of 1,000 or more per square mile - 15 minutes;¶

(C) Rural area, a geographic area 10 or more miles from a population center of 50,000 or more, with a population density of greater than six persons per square mile - 45 minutes;¶

(D) Frontier area, the areas of the state with a population density of six or fewer persons per square mile and are accessible by paved roads - 2 hours; and¶

(E) Search and rescue area, the areas of the state that are primarily forest, recreational or wilderness lands that are not accessible by paved roads or not inhabited by six or more persons on a year-round basis. - No established prehospital response time.¶

(c) Field command: A uniform policy shall assign responsibility for directing the care of the trauma patient in the prehospital setting in cases of response by multiple providers to assure scene control by the most qualified

responder;¶

(d) Utilization of air ambulance: Protocols for the medical direction, activation and utilization of air ambulance service(s) shall be established;¶

(e) Patient Care Report: All prehospital emergency care providers shall use a patient care report as defined in OAR 333-255-0000; and¶

(f) Utilization of Oregon Trauma System identification bracelet: All prehospital emergency medical care providers shall use the official ~~Authority~~Oregon Health Authority (Authority) numbered trauma system identification bracelet when the patient meets trauma system entry criteria or is entered into the trauma system and notify the receiving trauma hospital of the incoming patient. The prehospital emergency medical care provider shall record the number on the patient's patient care report.¶

(3) Medical Direction and Treatment:¶

(a) Protocols, policies and procedures: Providers in each trauma system area shall function under an effective and coordinated set of off-line prehospital trauma protocols and on-line medical direction trauma policies and procedures which address basic, intermediate and advanced levels of care. Off-line treatment protocols shall clearly describe all treatment and transportation procedures and identify those procedures which require on-line medical authorization. Medical direction policies and procedures must assure consistent area-wide coordination, data collection and area-wide quality improvement responsibility;¶

(b) Hospital status: In the event that on-line medical direction serves two or more categorized or designated hospitals, there shall be a system for medical direction to continuously determine the current status of hospital trauma care capabilities; and¶

(c) Physician qualifications: On-line medical direction physicians must be qualified for this role by virtue of training, experience and interest in prehospital trauma care as demonstrated through emergency medicine and Advanced Trauma Life Support (ATLS) training in accordance with the American College of Surgeons ATLS course.¶

(4)(a) Triage and Transportation: Triage and transportation protocols shall be written to ensure that patients who at any time meet field triage criteria as set forth in Exhibit 2 will be transported directly to a categorized trauma hospital as described under OAR 333-200-0090. The protocols must be based on field triage criteria (Exhibit 2) and identify the following:¶

(A) Which patients are appropriate for transport to a Level I, II, III or IV trauma hospital based on the capabilities of the hospitals in the ATAB;¶

(B) Conditions in which an ambulance may bypass a Level III or IV trauma hospital in order to transport directly to a Level I or II trauma hospital; and¶

(C) Conditions in which air transport should be considered for transport directly to a Level I or II trauma hospital.¶

(b) Triage and transportation protocols shall be followed unless otherwise advised by on-line medical direction or under the following circumstances:¶

(A) If unable to establish and maintain an adequate airway, the patient shall be taken to the nearest hospital to obtain definitive airway control. Upon establishing and maintaining airway control, the patient shall be immediately transferred to a Level I or Level II trauma hospital;¶

(B) If the scene time plus transport time to a Level I or Level II trauma hospital is significantly greater than the scene time plus transport time to a closer Level III or Level IV trauma hospital;¶

(C) If the hospital is unable to meet hospital resource standards as defined in Exhibit 4, when there are multiple patients involved, or the patient needs specialty care; or¶

(D) If on-line medical direction overrides these standards for patients with special circumstances, such as membership in a health maintenance organization, and if the patient's condition permits.¶

(E) Application of paragraphs (B), (C), and (D) of this subsection must not delay definitive medical or surgical treatment.¶

(5) Hospital Resources:¶

(a) Trauma system hospital identification: Either the categorization or designation method of identifying trauma system hospitals as described under OAR 333-200-0090(1), (3) and (4) shall be recommended to the Authority; and¶

(b) Resource criteria: Trauma system hospitals shall meet or exceed the trauma hospital resource standards as set forth in Exhibit 4 and hospital activation criteria as set forth in Exhibit 3. Area criteria that exceed the criteria set forth in Exhibit 4 shall be accompanied by an informational statement of the additional costs that a hospital will incur to meet these standards.¶

(6) Inter-hospital Transfers:¶

(a) Identification of patients: ATAB-wide criteria which meet or exceed any of the criteria set forth in Exhibit 5 of these rules shall be established to identify patients who should be transferred to a Level I or II trauma system hospital or specialty care center.¶

(b) When it is determined that a patient transfer is warranted:¶

- (A) The transfer shall take place after the stabilization of the patient's emergency medical condition has been provided within the capabilities of the local hospital, which may include operative intervention; and¶
- (B) The transfer to a Level I or II trauma hospital shall not be delayed for diagnostic procedures that have no impact on the transfer process or the immediate need for resuscitation.¶
- (c) In all situations regarding an inter-hospital transfer, the decision to retain or transfer the patient shall be based on medical knowledge, experience, and resources available to the patient.¶
- (d) The hospital's trauma performance improvement and patient safety process shall monitor all cases meeting inter-hospital transfer criteria. The Authority, through annual reports and site surveys, shall monitor this performance category.¶
- (7) Inter-hospital Transfers with Health Maintenance Organizations:¶
- (a) Trauma system hospitals shall facilitate the transfer of a member of a health maintenance organization or other managed health care organization when the emergency medical condition of the member permits and no deterioration of that condition is likely to result from or occur during the transfer of the patient. Trauma system hospitals shall transfer a patient in accordance with the provisions of ~~ORS 431.611(2)(a) and (b)~~ A.065(2) and any other applicable laws or regulations.¶
- (b) A patient will be deemed stabilized, if the treating physician attending to the patient in the trauma hospital has determined, within reasonable clinical confidence, that the emergency medical condition has been resolved.¶
- (c) Hospitals or health maintenance organizations may not attempt to influence patients and families, prior to the patient's stabilization, into making decisions affecting their trauma treatment by informing them of financial obligations if they remain in the trauma facility.¶
- (d) Health maintenance organizations and non-designated trauma facilities shall report follow-up information to the transferring trauma system hospital and all required data as set forth in the Oregon Trauma Registry data dictionary; and¶
- (e) Hospitals or health maintenance organizations that receive or transfer trauma patients shall participate in regional quality improvement activities.¶
- (8) Rehabilitation Resources:¶
- (a) Capabilities for trauma rehabilitation in each trauma system area and transfer procedures to other rehabilitation facilities shall be described; and¶
- (b) Rehabilitation resources for burns, pediatrics, neuro-trauma and extended care shall be included.¶
- (9) Quality Improvement:¶
- (a) Provisions shall be made for at least quarterly review of medical direction, prehospital emergency medical care and hospital care of trauma cases:¶
- (A) Area-wide criteria for identifying trauma cases for audit shall be described and shall include all trauma related deaths;¶
- (B) Responsibility for identifying and reviewing all trauma cases meeting audit criteria shall be assigned; and¶
- (C) Quarterly reports shall be submitted to the Authority by the ATAB or its representative on confidential forms.¶
- (b) The ATAB, STAB, all Area and State Quality Improvement Committee(s) and the Authority shall meet in executive session as set forth in ORS 192.660 when discussing individual patient cases; and¶
- (c) No member of any ATAB, the STAB, or any committee, subcommittee or task force thereof, shall disclose information or records protected by ~~ORS 431.627 or~~ A.090 or ORS 41.675 to unauthorized persons. Any person violating these rules shall be immediately removed by the Authority from membership on any trauma system committee, subcommittee or task force thereof.¶
- (10) Education and Research:¶
- (a) Trauma training: Trauma system hospitals shall provide or assist in the provision of prehospital trauma management courses to all EMS providers involved in the prehospital emergency medical care of severely injured patients; and¶
- (b) Research: In areas with Level I hospitals, clinical and basic research in trauma and publication of results involving surgical and nonsurgical specialists, nurses, and allied health professionals engaged in trauma care, shall be promoted.¶
- (11) Prevention:¶
- (a) Public education: Public education and awareness activities shall be developed by trauma system hospitals to increase understanding of the trauma system and injury prevention. These activities shall be appropriate to the size and resources of the area; and¶
- (b) Development and evaluation: Trauma prevention activities to identify and address area problems shall be supported.¶
- (12) Disaster Management: Provisions for addressing triage of trauma system patients to non-trauma hospitals during a natural or manmade disaster must be addressed and include:¶
- (a) Implementation and termination of the disaster management plan; and¶

(b) Reporting requirements of the Oregon Trauma Registry and Oregon Trauma Program.¶

[ED. NOTE: To view tables referenced in rule text, click here to view rule.]

Statutory/Other Authority: ORS 431A.065

Statutes/Other Implemented: ORS 431A.060, 431A.065

RULE ATTACHMENTS MAY NOT SHOW CHANGES. PLEASE CONTACT AGENCY REGARDING CHANGES.

**EXHIBIT 2
OAR chapter 333, division 200**

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
<ul style="list-style-type: none"> • Penetrating injuries to head, neck, torso, and proximal extremities • Skull deformity, suspected skull fracture • Suspected spinal injury with new motor or sensory loss • Chest wall instability, deformity, or suspected flail chest • Suspected pelvic fracture • Suspected fracture of two or more proximal long bones (humerus or femur) • Crushed, degloved, mangled, or pulseless extremity • Amputation proximal to wrist or ankle • Active bleeding requiring a tourniquet or wound packing with continuous pressure 	<p>All Patients</p> <ul style="list-style-type: none"> • Unable to follow commands (motor GCS less than 6) • RR less than 10 or greater than 29 breaths/min • Respiratory distress or need for respiratory support • Room-air pulse oximetry less than 90% <p>Age 0-9 years</p> <ul style="list-style-type: none"> • SBP less than 70 mmHg + (2 x age years) <p>Age 10-64 years</p> <ul style="list-style-type: none"> • SBP less than 90 mmHg OR • HR greater than SBP <p>Age 65 years or older</p> <ul style="list-style-type: none"> • SBP less than 110 mmHg OR • HR greater than SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA

Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
<ul style="list-style-type: none"> • High-Risk Auto Crash <ul style="list-style-type: none"> - Partial or complete ejection - Significant intrusion (including roof) <ul style="list-style-type: none"> ▪ Greater than 12 inches occupant site OR ▪ Greater than 18 inches any site OR ▪ Need for extrication for entrapped patient - Death in passenger compartment - Child (Age 0-9) unrestrained or in unsecured child safety seat - Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height greater than 10 feet (all ages) 	<p>Consider risk factors, including:</p> <ul style="list-style-type: none"> • Low-level falls in young children (ages 5 years or younger) or older adults (ages 65 years or older) with significant head impact • Anticoagulant use • Suspicion of child abuse • Special, high-resource healthcare needs • Pregnancy greater than 20 weeks • Burns in conjunction with trauma • Children should be triaged preferentially to pediatric capable centers <p>If concerned, take to a trauma center</p>

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

EXHIBIT 3
OAR chapter 333, division 200

OREGON HOSPITAL TRAUMA TEAM ACTIVATION CRITERIA

<ul style="list-style-type: none">• Confirmed blood pressure less than 90 mmHg at any time in adults, and age-specific hypotension in children aged 0-9 years less than 70 mmHg + (2 x age years)• All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee• Glasgow Coma Scale less than 9 (with mechanism attributed to trauma)• Transfer patients from another hospital who require ongoing blood transfusions• Patients intubated in the field and directly transported to the trauma center• Patients who have respiratory compromise or are in need of an emergent airway <p>Emergency physician's discretion</p>	<p>YES</p> <p>→</p> <p>Activate Full Trauma Team</p>	<p style="text-align: center;">Full Trauma Team</p> <ul style="list-style-type: none">- General Surgeon- Emergency Physician- Emergency Nurse(s)- Laboratory- Radiology- Respiratory Therapist <p><u>Response times from patient arrival:</u></p> <p>Level I & II – 15 minutes Level III & IV – 30 minutes</p>
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Oregon Hospital Trauma Team Activation Criteria (continued)

- Glasgow Coma Scale of 9 - 13
- Chest wall instability, deformity, or suspected flail chest
- Suspected fracture of two or more proximal long bones (humerus or femur)
- Suspected spinal cord injury with motor sensory deficit
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Skull deformity, suspected skull fracture
- Suspected pelvic fracture
- Falls from a height greater than 10 feet (all ages)
- High-risk auto crash
 - Partial or complete ejection
 - Significant intrusion including roof: greater than 12 inches occupant site; **OR** greater than 18 inches any site; **OR** need for extrication for entrapped patient
 - Death in passenger compartment
 - Child (age 0-9 years) unrestrained or in unsecured child safety seat
 - Vehicle telemetry data consistent with severe injury
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)

Emergency physician's discretion

Consider risk factors, including:

- Low-level falls in young children (age 0-5 years) or older adults (age 65 years or greater) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy greater than 20 weeks
- Burns in conjunction with trauma
- Systolic blood pressure (SBP) less than 110 mmHg **OR** heart rate greater than SBP (age 65 years or greater)
- Children should be triaged preferentially to pediatric capable trauma centers

YES



**Activate
Modified
Trauma
Team**

Modified Trauma Team

- Emergency Physician
- Emergency Nurse(s)
- Laboratory
- Radiology

EXHIBIT 4

OAR Chapter 333, Division 200

OREGON TRAUMA HOSPITAL RESOURCE STANDARDS

Acronym Legend:

ATLS	Advance Trauma Life Support®	OPO	Organ Procurement Organization
CME	Continuing Medical Education	PACU	Post Anesthesia Care Unit
CRNA	Certified Nurse Anesthetist	PIPS	Performance Improvement & Patient Safety
CT	Computed Tomography	PGY	Post Graduate Year
ICU	Intensive Care Unit	TBI	Traumatic Brain Injury
ISS	Injury Severity Score	TMD	Trauma Medical Director
MRI	Magnetic Resonance Imaging	TPM	Trauma Program Manager
NTDB	National Trauma Data Bank	TTA	Trauma Team Activation
NTDS	National Trauma Data Standard	MOC	Maintenance of Certification

R = Required standard for the applicable category
 ■ = Standard not required

Tag	Standard/Chapter	Level	Level	Level	Level
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
TRAUMA SYSTEMS					
1-1	Active engagement of Trauma Center and their healthcare providers	R	R	R	R
1-2	Regional Trauma System engagement with standardization, implementation and performance improvement and patient safety (PIPS)	R	R	R	R
1-3	State and Regional Trauma System development and improvement	R	R	R	R
TRAUMA CENTER DESCRIPTION and THEIR ROLES IN A TRAUMA SYSTEM					
2-1	Trauma center must have an integrated, concurrent PIPS program to ensure optimal care and continuous improvement in care	R	R	R	R
2-2	Surgical commitment	R	R	R	■
2-3	Trauma centers must be able to provide the necessary human and physical resources (physical plant and equipment) to properly administer acute care consistent with their level of categorization	R	R	R	R
2-4	Trauma center must admit at least 1,200 trauma patients yearly or have 240 admissions with an Injury Severity Score (ISS) of more than 15	R	■	■	■
2-5	Through the trauma PIPS program and hospital policy, the trauma medical director (TMD) must have responsibility and authority for determining each general	R	R	R	■

	surgeon's ability to participate on the trauma panel based on an annual review				
2-6-1	Qualified attending surgeons must participate in major therapeutic decisions, be present in the emergency department for major resuscitations, be present at operative procedures, and be actively involved in the critical care of all seriously injured patients	R	R		
2-6-2	A resident in postgraduate year 4 or 5 or an attending emergency physician who is part of the trauma team may be approved to begin resuscitation while awaiting the arrival of the attending surgeon but cannot independently fulfill the responsibilities of, or substitute for, the attending surgeon	R	R		
2-7	The presence of such a resident or attending emergency physician may allow the attending surgeon to take call from outside the hospital. In this case, local criteria and a PIPS program must be established to define conditions requiring the attending surgeon's immediate hospital presence	R	R		
2-8-1	It is expected that the surgeon will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time for the highest-level activation tracked from patient arrival for Level I and II trauma centers is 15 minutes, and 30 minutes for Level III trauma centers. The program must demonstrate that the surgeon's presence is in compliance at least 80 percent of the time	R	R	R	
2-8-2	It is expected that the physician (if available) or midlevel provider will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time is 30 minutes for the highest level of activation, tracked from patient arrival. The PIPS program must demonstrate that the physician's (if available) or midlevel provider's presence is in compliance at least 80 percent of the time				R
2-9	The attending surgeon's immediate (within 15 minutes) arrival for patients with appropriate activation criteria must be monitored by the hospital's trauma PIPS program	R	R		
2-10	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
2-11	A published backup call schedule for trauma surgery must be available	R	R		
2-12	Continuous general surgical coverage			R	
2-13-1	Well-defined transfer plans are essential			R	R
2-13-2	Collaborative treatment and transfer guidelines reflecting the Level IV facilities' capabilities must be developed and				R

	regularly reviewed, with input from higher-level trauma centers in the region				
2-14	24-hour emergency coverage by a physician or midlevel provider				R
2-15	The emergency department must be continuously available for resuscitation with coverage by a registered nurse and physician or midlevel provider, and it must have a physician director				R
2-16	Emergency department providers that are not board certified in emergency medicine must maintain current Advanced Trauma Life Support® (ATLS®) certification as part of their competencies in trauma				R
2-17	There is a TMD and trauma program manager (TPM) knowledgeable and involved in trauma care that work together with guidance from the trauma peer review committee to identify events, develop corrective action plans, and ensure methods of monitoring, reevaluation, and benchmarking.	R	R	R	R
2-18	Multidisciplinary trauma peer review committee must meet regularly, with required attendance of medical staff active in trauma resuscitation, to review systemic and care provider issues, as well as propose improvements to the care of the injured	R	R	R	R
2-19	PIPS program must have audit filters to review and improve pediatric and adult patient care	R	R	R	R
2-20	Because of the greater need for collaboration with receiving trauma centers, trauma center must actively participate in regional or statewide trauma system meetings and committees that provide oversight				R
2-21	Trauma center must be the local trauma authority and participate in the provision of training for prehospital and hospital-based providers				R
2-22	Facility must participate in regional disaster management plans and exercises	R	R	R	R
2-23	Any adult trauma center that annually admits to the hospital 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating their capability to care for injured children: trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R	R	
2-24	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R	R	
2-25	For adult trauma centers annually admitting to the hospital fewer than 100 injured children younger than 15 years, these resources are desirable. These hospitals,	R	R	R	

	however, must review the care of their injured children through their PIPS program				
PREHOSPITAL TRAUMA CARE					
3-1	The trauma program must participate in the training of prehospital personnel, the development and improvement of prehospital care protocols, and PIPS programs	R	R	R	R
3-2	The protocols that guide prehospital trauma care must be established by the trauma health care team, including surgeons, emergency physicians, medical directors for EMS agencies, and basic and advanced prehospital personnel	R	R	R	R
3-3	Rigorous multidisciplinary performance improvement is essential to evaluate overtriage and undertriage rates to attain the optimal goal of less than 5 percent undertriage	R	R	R	
3-4	The TMD must be involved in the development of the trauma center's bypass (diversion) protocol	R	R	R	
3-5	The trauma surgeon must be involved in the decision regarding bypass (diversion) each time the center goes on bypass	R	R	R	
3-6	The trauma center must not be on bypass (diversion) more than 5 percent of the time	R	R	R	
3-7	When a trauma center is required to go on bypass or to divert, the center must have a system to notify dispatch and EMS agencies. The center must do the following: <ul style="list-style-type: none"> • Prearrange alternative destinations with transfer agreements in place; • Notify other centers of divert or advisory status; - Maintain a divert log; and • Subject all diverts and advisories to performance improvement procedures 	R	R	R	R
INTERHOSPITAL TRANSFERS					
4-1	Direct physician-to-physician contact is essential	R	R	R	R
4-2	The decision to transfer an injured patient to a specialty care facility in an acute situation must be based solely on the needs of the patient and not on the requirements of the patient's specific provider network (for example, a health maintenance organization or a preferred provider organization) or the patient's ability to pay	R	R	R	
4-3-1	A very important aspect of interhospital transfer is an effective PIPS program that includes evaluating transport activities	R	R	R	R
4-3-2	Perform a PIPS review of all transfers out	R	R	R	R
HOSPITAL ORGANIZATION and the TRAUMA PROGRAM					

5-1-1	A decision by a hospital to become a trauma center requires the commitment of the institutional governing body and the medical staff	R	R	R	R
5-1-2	Documentation of administrative commitment is required from the governing body and the medical staff	R	R	R	R
5-2	This [administrative] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-3	The [medical staff] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-4	The trauma program must involve multiple disciplines and transcend normal departmental hierarchies	R	R	R	
5-5-1	The TMD must be a current board-certified general surgeon (or a general surgeon eligible for certification by the American Board of Surgery according to current requirements) or a general surgeon who is an American College of Surgeons Fellow with a special interest in trauma care and must participate in trauma call	R	R	R	
5-5-2	TMD is a physician practicing emergency medicine, responsible for coordinating the care of injured patients, verifies continuing medical education (CME) of personnel, and has oversight of the trauma quality improvement process. The TMD is clinically involved with trauma patient management and responsible for credentialing of trauma team members.				R
5-6	The TMD must be current in ATLS®	R	R	R	R
5-7	The TMD must maintain an appropriate level of trauma-related extramural CME (12 hours annually, or 36 hours in 3 years)	R	R		
5-8	Membership and active participation in regional or national trauma organizations are essential for the TMD in Level I and II trauma centers and are desirable for TMDs in Level III and IV facilities	R	R		
5-9	The TMD must have the authority to manage all aspects of trauma care	R	R	R	
5-10	The TMD must chair and attend a minimum of 50% of the multidisciplinary trauma peer review committee meetings.	R	R	R	
5-11-1	The TMD, in collaboration with TPM, must have the authority to correct deficiencies in trauma care and exclude from trauma call the trauma team members who do not meet specified criteria	R	R	R	
5-11-2	In addition, the TMD must perform an annual assessment of the trauma panel providers in the form of Ongoing Professional Practice Evaluation (OPPE) and Focused	R	R	R	

	Professional Practice Evaluation (FPPE) when indicated by findings of the PIPS process				
5-12	The TMD must have the responsibility and authority to ensure compliance with the above requirements and cannot direct more than one trauma center	R	R	R	
5-13	The criteria for a graded activation must be clearly defined by the trauma center, with the highest level of activation including the six required criteria listed in Exhibit 3.	R	R	R	R
5-14	Trauma centers highest level of activation requires the response of the full trauma team within 15 minutes of arrival of the patient, and the criteria should include physiologic criteria and some or several of the anatomic criteria	R	R		
5-15	Trauma centers team must be fully assembled within 30 minutes			R	R
5-16-1	Other potential criteria for trauma team activation that have been determined by the trauma program to be included in the various levels of trauma activation must be evaluated on an ongoing basis in the PIPS process to determine their positive predictive value in identifying patients who require the resources of the full trauma team.	R	R	R	R
5-16-2	The emergency physician may initially evaluate the limited-tier trauma patient, but the center must have a clearly defined response expectation for the trauma surgical evaluation of those patients requiring admission	R	R	R	
5-17-1	Seriously injured patients must be admitted to, or evaluated by, an identifiable surgical service staffed by credentialed trauma providers	R	R		
5-17-2	Injured patients may be admitted to individual surgeons, but the structure of the program must allow the TMD to have oversight authority for the care of these patients.			R	
5-18	Programs that admit more than 10% of injured patients to non-surgical services must review all non-surgical admissions through the trauma PIPS process	R	R	R	
5-19	Sufficient infrastructure and support to ensure adequate provision of care must be provided for this service	R	R		
5-20	In teaching facilities, the requirements of the residency review committees must be met	R	R		
5-21	There must be a method to identify the injured patients, monitor the provision of health care services, make periodic rounds, and hold formal and informal discussions with individual practitioners			R	
5-22	In addition to administrative ability, the TPM must show evidence of educational preparation and clinical experience in the care of injured patients	R	R	R	

5-23-1	There must be a minimum of 1.0 FTE TPM or Trauma Coordinator dedicated to the trauma program for trauma centers with \geq 250 patients per year	R	R	R	R
5-23-2	A proportionate FTE Trauma Coordinator must be employed for trauma centers with < 250 patients per year			R	R
5-24-1	The TPM or Trauma Coordinator must show evidence of educational preparation, with a minimum of 16 hours per year (internal or external) of trauma-related continuing education and clinical experience in the care of injured patients	R	R	R	
5-24-2	The Trauma Coordinator must show evidence of educational preparation with a minimum of 4 hours per year (internal or external) of trauma-related continuing education and has completed an accredited course in the care of trauma patients				R
5-25	The trauma center's PIPS program must have a multidisciplinary trauma peer review committee chaired by the TMD	R	R	R	
CLINICAL FUNCTIONS – GENERAL SURGERY					
6-1	General surgeons caring for trauma patients must meet certain requirements, as described herein. These requirements may be considered to be in four categories: current board certification, clinical involvement, PIPS, and education.	R	R	R	
6-2	Board certification or eligible for certification by the American Board of Surgery according to current requirements or the alternate pathway as described by the American College of Surgeons (ACS) is essential for general surgeons who take trauma call.	R	R	R	
6-3	Non-board certified surgeons meet alternate criteria as described by ACS	R	R	R	
6-4	Trauma surgeons must have privileges in general surgery	R	R	R	
6-5	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
6-6-1	A published backup call schedule for trauma surgery must be available	R	R		
6-6-2	Maximum acceptable response time is 15 minutes for Level I and Level II; 30 minutes for Level III and Level IV. Response time is tracked from patient arrival rather than from notification or activation. 80% attendance threshold must be met for highest level of activation.	R	R	R	R
6-7-1	The attending surgeon is expected to be present in the operating room for all operations. A mechanism for documenting this presence is essential	R	R	R	
6-7-2	There must be a multidisciplinary trauma peer review committee chaired by the TMD with representatives	R	R	R	

	from: general surgery, orthopedic surgery, emergency medicine, ICU, and anesthesia – and for Level I and Level II trauma centers, neurosurgery and radiology. Liaisons from orthopedic surgery, emergency medicine, ICU, anesthesiology, neurosurgery, and radiology must attend a minimum of 50% of the meetings with appropriate documentation.				
6-8	Each member of the group of general surgeons must attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
6-9-1	All general surgeons on the trauma team must have successfully completed the ATLS® course at least once	R	R	R	R
6-9-2	The TMD must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME	R	R		
6-10-1	Trauma surgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board maintenance of certification (MOC) requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other general surgeons who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.	R	R	R	
6-10-2	General surgeons in a Level IV trauma hospital who take trauma call must be knowledgeable and current in the care of injured patients. This requirement must be met by the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – EMERGENCY MEDICINE					
7-1-1	The emergency department must have a designated emergency physician director supported by an appropriate number of additional physicians to ensure immediate care for injured patients	R	R	R	
7-1-2	The emergency department must have a designated emergency physician director supported by an				R

	appropriate number of additional providers to ensure immediate care for injured patients				
7-2	An emergency physician must be present in the department at all times	R	R		
7-3	Occasionally, it is necessary for the physician to leave the emergency department for short periods to address in-house emergencies. Such cases and their frequency must be reviewed by the PIPS program to ensure that this practice does not adversely affect the care of patients in the emergency department			R	
7-4	In institutions in which there are emergency medicine residency training programs, supervision must be provided by an in-house attending emergency physician 24 hours per day	R	R	R	
7-5	These roles and responsibilities must be defined, agreed on, and approved by the TMD	R	R	R	
7-6-1	Board certification or eligibility for certification by the appropriate emergency medicine board according to current requirements or the alternate pathway is essential for physicians staffing the emergency department and caring for trauma patients	R	R	R	
7-6-2	Non-board certified emergency medicine physicians meet alternate criteria as described by ACS	R	R	R	
7-7	Emergency physicians on the call panel must be regularly involved in the care of injured patients	R	R	R	
7-8	A representative from the emergency department must participate in the prehospital PIPS program	R	R	R	
7-9	A designated emergency physician liaison must be available to the TMD for PIPS issues that occur in the emergency department	R	R	R	
7-10	Emergency physicians must participate actively in the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
7-11	The emergency medicine liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee meetings	R	R	R	
7-12	The liaison from emergency medicine must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
7-13-1	Emergency physicians participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other emergency physicians who are not actively enrolled in the board MOC process, must meet this	R	R	R	

	requirement by documenting the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.				
7-13-2	Emergency physicians in Level IV trauma hospital who participate on the trauma team also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
7-14	All board-certified emergency physicians or those eligible for certification by an appropriate emergency medicine board according to current requirements must have successfully completed the ATLS course at least once	R	R	R	R
7-15	Physicians who are certified by boards other than emergency medicine who treat trauma patients in the emergency department are required to have current ATLS status	R	R	R	R
CLINICAL FUNCTIONS – NEUROSURGERY					
8-1	Neurotrauma is organized and led by a highly experienced and devoted neurosurgeon. If this surgeon is not the director of the neurosurgery service, a neurologic surgeon liaison must be designated	R	R		
8-2	Neurotrauma care must be continuously available for all TBI and spinal cord injury patients and must be present and respond within 30 minutes based on institutional-specific criteria	R	R		
8-3	A reliable, published neurotrauma call schedule must be provided with formally arranged contingency plans in case the capability of the neurosurgeon, hospital, or system to care for neurotrauma patients is overwhelmed	R	R		
8-4	The center must have a predefined and thoroughly developed neurotrauma diversion plan that is implemented when the neurosurgeon on call becomes encumbered. A predefined, thoroughly developed neurotrauma diversion plan must include the following: <ul style="list-style-type: none"> • Emergency medical services notification of neurosurgery advisory status/diversion; • A thorough review of each instance by the PIPS program; and 	R	R		

	<ul style="list-style-type: none"> Monitoring of the efficacy of the process by the PIPS program 				
8-5	<p>A formal, published contingency plan must be in place for times in which a neurosurgeon is encumbered upon the arrival of a neurotrauma case. The contingency plan must include the following:</p> <ul style="list-style-type: none"> A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the neurotrauma patient; Transfer agreements with a similar or higher-level verified trauma center; Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support; and Monitoring of the efficacy of the process by the PIPS program. 	R	R	R	
8-6-1	If one neurosurgeon covers two centers within the same limited geographic area, there must be a published backup schedule	R	R	R	
8-6-2	The performance improvement process must demonstrate that appropriate and timely care is provided	R	R	R	
8-7	There must be a plan approved by the TMD that determines which types of neurosurgical injuries may remain and which should be transferred			R	
8-8	Transfer agreements must exist with appropriate Level I and Level II trauma centers			R	
8-9	In all cases, whether patients are admitted or transferred, the care must be timely, appropriate, and monitored by the PIPS program			R	
8-10-1	Board certification or eligibility for certification by an appropriate neurosurgical board according to the current requirements or the alternate pathway is essential for neurosurgeons who take trauma call	R	R	R	
8-10-2	Alternate Criteria for Non-Board Certified Neurosurgeons	R	R	R	
8-11	Qualified neurosurgeons should be regularly involved in the care of patients with head and spinal cord injuries and must be credentialed by the hospital with general neurosurgical privileges	R	R		
8-12	The neurosurgery service must participate actively in the overall trauma PIPS program	R	R		
8-13-1	The neurosurgery liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee's meetings	R	R		
8-13-2	Centers with any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

8-14	The liaison representative from neurosurgery must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
8-15-1	Neurosurgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) Other neurosurgeons participating in trauma call who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program	R	R		
8-15-2	If a Level III trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).			R	
8-15-3	If a Level IV trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – ORTHOPEDIC SURGERY					
9-1	Because of their skills and training in the management of the acute and rehabilitation phases of musculoskeletal trauma, physical and occupational therapists and rehabilitation specialists are essential	R	R		

9-2	Operating rooms must be promptly available to allow for emergency operations on musculoskeletal injuries, such as open fracture debridement and stabilization, external fixator placement, and compartment decompression	R	R	R	
9-3	A system must be organized so that musculoskeletal trauma cases can be scheduled without undue delay and not at inappropriate hours that might conflict with more urgent surgery or other elective procedures	R	R		
9-4	There must be an orthopedic surgeon who is identified as the liaison to the trauma program	R	R	R	
9-5-1	Orthopedic care must be overseen by an individual who has completed a fellowship in orthopedic traumatology approved by the Orthopedic Trauma Association (OTA)	R			
9-5-2	In a pediatric trauma center this requirement may be met by having formal transfer agreements that specify which cases will be transferred for high level orthopedic oversight and assuring that all such transfers (or potential transfers) are reviewed as part of the performance improvement process.				
9-6	Orthopedic team members must have dedicated call at their institution or have an effective backup call system	R	R		
9-7	Orthopedic team members must be available in the trauma resuscitation area within 30 minutes after consultation has been requested by the surgical trauma team leader for multiply injured patients based on institution-specific criteria.	R	R		
9-8	The performance improvement process must ensure that care is timely and appropriate	R	R		
9-9	If the on-call orthopedic surgeon is unable to respond promptly, a backup consultant on-call surgeon must be available	R	R		
9-10-1	The design of this system is the responsibility of the orthopedic trauma liaison but must be approved by the TMD	R	R		
9-10-2	All necessary resources for modern musculoskeletal trauma care must be provided including instruments, equipment, and personnel, along with readily available operating rooms for musculoskeletal trauma procedures	R	R		
9-11	An orthopedic surgeon must be on call and promptly available 24 hours a day			R	
9-12	If the orthopedic surgeon is not dedicated to a single facility while on call, then a published backup schedule is required			R	
9-13	The PIPS process must review the appropriateness of the decision to transfer or retain major orthopedic trauma cases			R	

9-14	There must be protocols for the following orthopedic emergencies: 1) the type and severity of pelvic and acetabular fractures that will be treated at the institutions as well as those that will be transferred out for care; 2) the timing and sequence for the treatment of long bone fractures in multiply injured patients; and 3) the wash out time for open fractures. These protocols must be included as part of the PIPS process	R	R		
9-15	The orthopedic service must participate actively with the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
9-16	The orthopedic liaison to the trauma PIPS program must attend a minimum of 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
9-17-1	Board certification or eligibility for certification by an appropriate orthopedic board according to the current requirements, or the alternate pathway is essential for orthopedic surgeons who take trauma call	R	R	R	
9-17-2	Alternate Criteria for Non- Board Certified Orthopedic Surgeons	R	R	R	
9-18	The orthopedic surgical liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
9-19-1	Orthopedic surgeons participating on the trauma call panel must demonstrate evidence on ongoing trauma-related education. Staying current with board MOC is an acceptable method of ongoing trauma-related education. Other members of the orthopedic trauma team who are not actively enrolled in the board MOC process must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program	R	R	R	
9-19-2	If a Level IV trauma hospital provides this service, other members of the orthopedic trauma team must be knowledgeable about and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC				R

	requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				
PEDIATRIC TRAUMA CARE					
Trauma hospitals seeking categorization as a Level I or Level II Pediatric Trauma Center shall meet the following pediatric trauma care standards.					
10-1-1	Hospitals that pursue categorization as pediatric trauma centers must meet the same resource requirements as adult trauma centers, in addition to pediatric resource requirements.	R	R		
10-1-2	A Level I pediatric trauma center must annually admit 200 or more injured children younger than 15 years	R			
10-2	A Level II pediatric trauma center must annually admit 100 or more injured children younger than 15 years		R		
10-3	All Level I and II pediatric trauma centers must have a dedicated pediatric trauma program manager	R	R		
10-4	All Level I and II pediatric trauma centers must have a pediatric trauma registrar	R	R		
10-5	In a Level I pediatric trauma center, the pediatric trauma program manager must be a full-time position dedicated to the pediatric trauma service	R			
10-6	All pediatric trauma centers must have a pediatric trauma performance improvement and patient safety (PIPS) program	R	R		
10-7	In addition, all pediatric trauma centers must have the following programs: pediatric rehabilitation, child life and family support programs, pediatric social work, child protective services, pediatric injury prevention, community outreach, and education of health professionals and the general public in the care of pediatric trauma patients	R	R		
10-8	Level I and II pediatric trauma centers must have a mechanism in place to assess children for maltreatment	R	R		
10-9	Level I pediatric trauma centers must have identifiable pediatric trauma research	R			
10-10	The pediatric Level I center's research requirement is equivalent to that of adult Level I trauma centers	R			
10-11	In combined Level I adult and pediatric centers, half of the research requirement must be pediatric research	R			
10-12	A Level I pediatric trauma center must have at least two surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgery	R			
10-13	On staff, there must be one board-certified surgeon or one surgeon eligible for certification by an appropriate orthopedic board according to the current requirements	R			

	of that board who also has had pediatric fellowship training				
10-14	Additionally, there must be on staff at least one board-certified surgeon or one surgeon eligible for certification by an appropriate neurosurgical board according to current requirements of that board who also has had pediatric fellowship training	R			
10-15	There must be one additional board-certified orthopedic surgeon or surgeon eligible for certification by an appropriate orthopedic board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-16	There must be one additional board-certified neurosurgeon or surgeon eligible for certification by an appropriate neurosurgical board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-17	There must be two physicians who are board certified or eligible for certification in pediatric critical care medicine, according to current requirements in pediatric critical care medicine: or in pediatric surgery and surgical critical care by the American Board of Surgery	R			
10-18	There must be two physicians who are board certified or eligible for certification by an appropriate emergency medicine board according to current requirements in pediatric emergency medicine	R			
10-19	The pediatric intensive care unit must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-20	The pediatric section of the emergency department must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-21	In a Level II pediatric trauma center, there must be at least one pediatric surgeon who is board-certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgeon		R		
10-22	There must be one surgeon who is board-certified or eligible for certification by an appropriate orthopedic board identified with demonstrated interests and skills in pediatric trauma care		R		
10-23	There must be one surgeon who is board-certified or eligible for certification by an appropriate neurosurgical board identified with demonstrated interests and skills in pediatric trauma care		R		
10-24	In a Level I pediatric trauma center, the pediatric trauma medical director must be board certified or eligible for certification by the American Board of Surgery according	R			

	to current requirements for pediatric surgery or alternatively, a pediatric surgeon who is a Fellow of the American College of Surgeons with a special interest in pediatric trauma care, and must participate in trauma call				
10-25	In a Level II pediatric trauma center, the pediatric trauma medical director should be a board-certified pediatric surgeon or a surgeon eligible for certification by the American Board of Surgery according to current requirements for pediatric surgeons. This individual must be a board-certified general surgeon or a general surgeon eligible for certification by the American Board of Surgery according to current requirements qualified to serve on the pediatric trauma team as defined in the following paragraph		R		
10-26	When the number of pediatric surgeons on staff is too few to sustain the pediatric trauma panel, general surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements may serve on the pediatric trauma team. In this circumstance, they must be credentialed by the hospital to provide pediatric trauma care, be members of the adult trauma panel, and be approved by the pediatric trauma medical director	R	R		
10-27	At a minimum, a Level I pediatric trauma center must have continuous rotations in trauma surgery for senior residents (Clinical PGY 3–5) who are part of an Accreditation Council for Graduate Medical Education–accredited program	R			
10-28	At a minimum, these rotations should include residency programs in all the following specialties: general surgery, orthopedic surgery, emergency medicine, and neurosurgery. They may also include support of a pediatric surgical fellowship	R			
10-29	In Level I and II pediatric trauma centers, other specialists (in anesthesiology, neurosurgery, orthopedic surgery, emergency medicine, radiology, and rehabilitation) providing care to injured children who are not pediatric-trained providers also should have sufficient training and experience in pediatric trauma care and be knowledgeable about current management of pediatric trauma in their specialty. The program must make specialty-specific pediatric education available for these specialists	R	R		
10-30	An organized pediatric trauma service led by a pediatric trauma medical director must be present in Level I and II pediatric trauma centers	R	R		

10-31	The pediatric trauma service must maintain oversight of the patient's management while the patient is in the intensive care unit	R	R		
10-32	The trauma service should work collaboratively with the pediatric critical care providers, although all significant therapeutic decisions must be approved by the trauma service, and the service must be made aware of all significant clinical changes	R	R		
10-33	The surgical director of the pediatric intensive care unit must participate actively in the administration of the unit, as evidenced by the development of pathways and protocols for care of surgical patients in the intensive care unit and in unit-based performance improvement and should be board-certified in surgical critical care	R	R		
10-34-1	Pediatric surgeons or trauma surgeons with pediatric privileges must be included in all aspects of the care of injured children admitted to an intensive care unit	R	R		
10-34-2	Any adult trauma center that annually admits 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating its capability to care for the injured child	R	R		
10-34-3	The trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R		
10-34-4	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R		
10-34-5	For adult trauma centers admitting fewer than 100 injured children younger than 15 years per year, these resources are desirable. These hospitals, however, must review the care of all injured children through their PIPS programs	R	R		
10-35	Level I and II pediatric trauma centers must submit data to the National Trauma Data Bank® (NTDB®)	R	R		
10-36	There must be a trauma peer review committee chaired by the pediatric trauma medical director with participation by the pediatric /general surgeons and liaisons from pediatric/general surgery, orthopedic surgery, neurosurgery, emergency medicine, pediatric critical care medicine, anesthesia, and radiology to improve trauma care by reviewing selected deaths, complications, and sentinel events with the objectives of identification of issues and appropriate responses	R	R		
10-37	The aforementioned representatives must attend at least 50% of the trauma peer review meetings, and their attendance must be documented	R	R		

10-38	All pediatric and general surgeons on the pediatric trauma panel treating children must attend at least 50% of the trauma peer review meetings	R	R		
10-39	In level I and II pediatric trauma centers, the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) If the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine are not actively enrolled in the board MOC process, each must each accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external CME, of which at least 9 hours (in 3 years) must be related to clinical pediatric trauma care	R	R		
10-40	The other general surgeons, orthopedic surgeons, neurosurgeons, emergency medicine physicians, and critical care medicine physicians who take trauma call in Level I and II pediatric trauma centers also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 12 hours of CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).	R	R		

COLLABORATIVE CLINICAL SERVICES

For purposes of the following collaborative clinical service standards, a Level IV trauma center shall meet the prescribed standard if the Level IV provides the service. This is noted by the following symbol:



11-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for emergency operations	R	R	R	R
11-2-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for managing airway problems	R	R	R	R

11-2-2	Anesthesiology services must be present at full team activation within 15 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.	R	R		
11-2-3	Anesthesiology services must be present at full team activation within 30 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.			R	R
11-3-1	The anesthetic care of injured patients must be organized and supervised by an anesthesiologist who is highly experienced and committed to the care of injured patients and who serves as the designated liaison to the trauma program	R	R		
11-3-2	A qualified and dedicated physician anesthesiologist must be designated as the liaison to the trauma program	R	R		
11-3-3	A qualified anesthesiology provider must be designated as the liaison to the trauma program.			R	R
11-4	Anesthesia services must be available in-house 24 hours a day	R	R		
11-5	When anesthesiology senior residents or CRNAs are used to fulfill availability requirements, the attending anesthesiologist on call must be advised, available within 30 minutes at all times, and present for all operations	R	R		
11-6	The availability of anesthesia services and delays in airway control or operations must be documented by the hospital PIPS process	R	R	R	R
11-7	Anesthesiologists or CRNAs must be available within 30 minutes			R	R
11-8	Trauma centers without in-house anesthesia services must have protocols in place to ensure the timely arrival at the bedside by the anesthesia provider within 30 minutes of notification and request.			R	R
11-9	Under these circumstances, the presence of a physician skilled in emergency airway management must be documented			R	R
11-10	All anesthesiologists taking call must have successfully completed an anesthesia residency program	R	R		
11-11-1	The anesthesiologist liaison taking call must be currently board certified or eligible for certification by an appropriate anesthesia board according to current requirements in anesthesiology	R	R		
11-11-2	Board certification or eligibility for certification is essential for anesthesiologists who take trauma call.	R	R		
11-12	Trauma centers participation in the trauma PIPS program by the anesthesia liaison is essential	R	R	R	
11-13	The anesthesiology liaison to the trauma program must attend at least 50 percent of the multidisciplinary peer	R	R	R	

	review meetings, with documentation by the trauma PIPS program				
11-14	An operating room must be adequately staffed and available within 15 minutes	R	R		
11-15	If the first operating room is occupied, an adequately staffed additional room must be available	R	R		
11-16	Availability of the operating room personnel and timeliness of starting operations must be continuously evaluated by the trauma PIPS process and measures must be implemented to ensure optimal care	R	R		
11-17	An operating room must be adequately staffed and available within 30 minutes			R	R
11-18	If an on-call team is used, the availability of operating room personnel and the timeliness of starting operations must be continuously evaluated by the trauma PIPS process, and measures must be implemented to ensure optimal care			R	R
11-19	All trauma centers must have rapid fluid infusers, thermal control equipment for patients and resuscitation fluids, intraoperative radiologic capabilities, equipment for fracture fixation, and equipment for bronchoscopy and gastrointestinal endoscopy	R	R	R	
11-20	Trauma centers that provide neurosurgical services must have the necessary equipment to perform a craniotomy.	R	R	R	R
11-21	Must have cardiothoracic surgery capabilities available 24 hours per day and should have cardiopulmonary bypass equipment	R			
11-22	If cardiopulmonary bypass equipment is not immediately available, a contingency plan, including immediate transfer to an appropriate center and 100 percent performance improvement review of all patients transferred, must be in place	R	R		
11-23	Must have an operating microscope available 24 hours per day	R			
11-24	A PACU with qualified nurses must be available 24 hours per day to provide care for the patient if needed during the recovery phase	R	R	R	R
11-25	If this availability requirement is met with a team on call from outside the hospital, the availability of the PACU nurses and compliance with this requirement must be documented by the PIPS program	R	R	R	R
11-26	The PACU must have the necessary equipment to monitor and resuscitate patients, consistent with the process of care designated by the institution	R	R	R	R
11-27	The PIPS program, at a minimum, must address the need for pulse oximetry, end-tidal carbon dioxide detection,	R	R	R	R

	arterial pressure monitoring, pulmonary artery catheterization, patient rewarming, and intracranial pressure monitoring				
11-28	There must be policies designed to ensure that trauma patients who may require resuscitation and monitoring are accompanied by appropriately trained providers during transportation to, and while in, the radiology department	R	R	R	R
11-29	Conventional radiography must be available 24 hours per day	R	R	R	R
11-30	Computed tomography (CT) must be available 24 hours per day	R	R	R	
11-31	An in-house radiology technologist and CT technologist are required	R	R		
11-32	Qualified radiologists must be available within 30 minutes in person or by teleradiology for the interpretation of radiographs	R	R	R	
11-33	Qualified radiologists must be available within 30 minutes to perform complex imaging studies, or interventional procedures	R	R		
11-34	Diagnostic information must be communicated in a written or electronic form and in a timely manner	R	R	R	R
11-35	Critical information deemed to immediately affect patient care must be verbally communicated to the trauma team in a timely manner	R	R	R	R
11-36	The final report must accurately reflect the chronology and content of communications with the trauma team, including changes between the preliminary and final interpretations	R	R	R	R
11-37	Changes in interpretation between preliminary and final reports, as well as missed injuries, must be monitored through the PIPS program	R	R	R	R
11-38	A radiologist must be appointed as liaison to the trauma program	R	R		
11-39	The radiologist liaison must attend at least 50 percent of peer review meetings and should educate and guide the entire trauma team in the appropriate use of radiologic services	R	R		
11-40	Participation in the trauma PIPS program process by the radiology liaison is essential	R	R		
11-41	At a minimum, radiologists must be involved in protocol development and trend analysis that relate to diagnostic imaging	R	R		
11-42	There must be a mechanism in place to view radiographic imaging from referring hospitals within their catchment area	R	R		

11-43	Board certification or eligibility for certification by an appropriate radiology board according to current requirements is essential for radiologists who take trauma call	R	R		
11-44	Interventional radiologic procedures and sonography must be available 24 hours per day	R	R		
11-45	Magnetic resonance imaging (MRI) capability must be available 24 hours per day	R	R		
11-46	The MRI technologist may respond from outside the hospital; however, the PIPS program must document and review arrival within 1 hour of being called. This time should meet current clinical guidelines	R	R		
11-47	If the CT technologist takes call from outside the hospital, the PIPS program must document the technologist's time of arrival at the hospital			R	
11-48	A surgically directed ICU physician team must be led by a surgeon boarded in surgical critical care, and critically ill trauma patients should be cared for in a designated ICU	R			
11-49-1	A surgeon with current board certification in surgical critical care must be designated as the ICU director	R			
11-49-2	The ICU team may be staffed by critical care physicians from different specialties but must remain surgically directed as noted above	R			
11-50	The ICU must be staffed with a dedicated ICU physician team led by the ICU director	R			
11-51	Appropriately trained physicians must be available in-house within 15 minutes to provide care for the ICU patients 24 hours per day	R			
11-52	If the trauma attending provides coverage, a backup ICU attending must be identified and readily available	R			
11-53	A surgeon must serve as co-director or director of the ICU and be actively involved in, and responsible for, setting policies and administrative decisions related to trauma ICU patients		R	R	
11-54	The ICU director or co-director should be currently board certified or eligibility for certification in surgical critical care in a Level II trauma center. In Level II and III facilities, the ICU director or co-director must be a surgeon who is currently board certified or eligible for certification by the current standard requirements		R	R	
11-55	Physician coverage of critically ill trauma patients must be available within 15 minutes 24 hours per day for interventions by a credentialed provider		R		
11-56	Physician coverage of the ICU must be available within 30 minutes, with a formal plan in place for emergency coverage			R	R

11-57	The PIPS program must review all ICU admissions and transfers of ICU patients to ensure that appropriate patients are being selected to remain at the Level III and Level IV center vs. being transferred to a higher level of care			R	R
11-58	The trauma surgeon must retain responsibility for the patient and coordinate all therapeutic decisions	R	R	R	R
11-59	Many of the daily care requirements can be collaboratively managed by a dedicated ICU team, but the trauma surgeon must be kept informed and concur with major therapeutic and management decisions made by the ICU team	R	R	R	R
11-60-1	The PIPS program must document that timely and appropriate ICU care and coverage are being provided	R	R	R	R
11-60-2	The timely response of credentialed providers to the ICU must be continuously monitored as part of the PIPS program	R	R	R	R
11-61	There must be a designated ICU liaison to the trauma service	R	R	R	
11-62	This [ICU] liaison must attend at least 50 percent of the multidisciplinary peer review meetings, with documentation by the trauma PIPS program	R	R	R	
11-63	The ICU liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, or through an internal educational process based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-64	Other members of the ICU trauma team must be knowledgeable about, and current in, the care of injured patients. This requirement must be documented by the acquisition of 12 hours of trauma-related CME per year, on average, or through an internal educational process conducted by the trauma program and the ICU liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-65	Qualified critical care nurses must be available 24 hours per day to provide care for patients during the ICU phase	R	R	R	R
11-66	The patient-to-nurse ratio in the ICU must not exceed two to one	R	R	R	R

11-67	The ICU must have the necessary equipment to monitor and resuscitate patients	R	R	R	R
11-68	Intracranial pressure monitoring equipment must be available in Level I and II trauma centers and in Level III and Level IV trauma centers with neurosurgical coverage that admit neurotrauma patients	R	R	R	R
11-69	Trauma patients must not be admitted or transferred by a primary care physician without the knowledge and consent of the trauma service, and the PIPS program should monitor adherence to this guideline			R	R
11-70	Facilities are prepared to manage the most complex trauma patients and must have available a full spectrum of surgical specialists, including specialists in orthopedic surgery, neurosurgery, cardiac surgery, thoracic surgery, vascular surgery, hand surgery, microvascular surgery, plastic surgery, obstetric and gynecologic surgery, ophthalmology, otolaryngology, and urology	R			
11-71	Must have the surgical specialists described (above) for Level I trauma centers and should provide cardiac surgery		R		
11-72-1	Must have the availability and commitment of orthopedic surgeons			R	
11-72-2	For all patients being transferred for specialty care, such as burn care, microvascular surgery, cardiopulmonary bypass capability, complex ophthalmologic surgery, or high-complexity pelvic fractures, agreements with a similar or higher-qualified verified trauma center should be in place. If this approach is used, a clear plan for expeditious critical care transport, follow-up, and performance monitoring is required. If complex cases are being transferred out, a contingency plan should be in place and must include the following: <ul style="list-style-type: none"> • A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the patient. • Transfer agreements with similar or higher-verified trauma centers. • Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support. • Monitoring of the efficacy of the process by the PIPS programs. 	R	R	R	R
11-73	Medical specialists on staff must include specialists in cardiology, internal medicine, gastroenterology, infectious disease, pulmonary medicine, and nephrology and their respective support teams (for example,	R	R		

	respiratory therapy, a dialysis team, and nutrition support)				
11-74	Internal medicine specialists must be available on the medical staff			R	
11-75	A respiratory therapist must be available in the hospital 24 hours per day	R	R		
11-76	There must be a respiratory therapist on call 24 hours per day			R	
11-77	Acute hemodialysis must be available	R	R		
11-78	Trauma centers that do not have dialysis capabilities must have a transfer agreement in place			R	
11-79	Nutrition support services must be available	R	R		
11-80	Laboratory services must be available 24 hours per day for the standard analyses of blood, urine, and other body fluids, including microsampling when appropriate	R	R	R	R
11-81	The blood bank must be capable of blood typing and cross-matching	R	R	R	R
11-82	The blood bank must have an adequate in-house supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients	R	R		
11-83	The blood bank must have an adequate supply of packed red blood cells and fresh frozen plasma available within 15 minutes			R	R
11-84	Must have a massive transfusion protocol developed collaboratively between the trauma service and the blood bank	R	R	R	R
11-85	Coagulation studies, blood gas analysis, and microbiology studies must be available 24 hours per day	R	R	R	R
11-86	Advanced practitioners who participate in the initial evaluation of trauma patients must demonstrate current verification as an ATLS® provider	R	R	R	R
11-87-1	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners, as witnessed by an annual review by the TMD	R	R		
11-87-2	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners.			R	R
REHABILITATION					
12-1	Rehabilitation services must be available within the hospital's physical facilities or as a freestanding rehabilitation hospital, in which case the hospital must have transfer agreements	R	R		
12-2	Rehabilitation consultation services, occupational therapy, speech therapy, physical therapy, and social services must be available	R	R		

12-3	Physical therapy must be provided	R	R	R	
12-4	Social services must be provided	R	R	R	
12-5	Occupational therapy must be provided	R	R		
12-6	Speech therapy must be provided	R	R		
12-7	The following services must be available during the acute phase of care, including intensive care: physical therapy, social services, occupational therapy and speech therapy	R	R		
GUIDELINES FOR THE OPERATION of BURN CENTERS					
14-1	Centers that refer burn patients to a designated burn center must have in place written transfer agreements with the referral burn center	R	R	R	R
TRAUMA REGISTRY					
15-1	Trauma registry data must be collected and analyzed	R	R	R	R
15-2	Data must be collected in compliance with the National Trauma Data Standard (NTDS) and submitted to the National Trauma Data Bank® (NTDB®) every year in a timely fashion so that they can be aggregated and analyzed at the national level	R	R	R	
15-3	The trauma registry is essential to PIPS program and must be used to support the PIPS process	R	R	R	R
15-4	Findings must be used to identify injury prevention priorities that are appropriate for local implementation	R	R	R	R
15-5	Trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
15-6	Trauma registries should be concurrent. At a minimum, 80 percent of cases must be entered within 60 days of discharge	R	R	R	R
15-7	The Trauma Registrar must attend or have previously attended two courses within 12 months of being hired: (1) the American Trauma Society's Trauma Registrar Course or equivalent provided by a state trauma program; and (2) the Association of the Advancement of Automotive Medicine's Injury Scaling Course or an equivalent local course.	R	R	R	R
15-8	The trauma program must ensure that appropriate measures are in place to meet the confidentiality requirements of the data	R	R	R	R
15-9-1	One full-time equivalent employee dedicated to the registry must be available to process the data capturing the NTDS data set for every 500 admitted trauma patients annually	R	R		
15-9-2	A proportionate FTE must be employed for hospitals with less than 500 admitted trauma patients annually			R	R
15-10	Strategies for monitoring data validity are essential	R	R	R	R
PERFORMANCE IMPROVEMENT AND PATIENT SAFETY (PIPS)					

16-1-1	Trauma centers must have a PIPS program that includes a comprehensive written plan outlining the configuration and identifying both adequate personnel to implement that plan and an operational data management system	R	R	R	
16-1-2	The PIPS program must be supported by the collection and analysis of trauma registry data to identify opportunities for improvement	R	R	R	R
16-1-3	The processes of event identification and levels of review must result in the development of corrective action plans, and methods of monitoring, reevaluation, and benchmarking must be present	R	R	R	R
16-2-1	Problem resolution, outcome improvements, and assurance of safety (“loop closure”) must be readily identifiable through methods of monitoring, reevaluation, benchmarking, and documentation	R	R	R	
16-2-2	Peer review must occur at regular intervals to ensure that the volume of cases is reviewed in a timely fashion.	R	R	R	R
16-3-1	The trauma PIPS program must integrate with the hospital quality and patient safety effort and have a clearly defined reporting structure and method for provision of feedback	R	R	R	
16-3-2	The trauma PIPS program is endorsed by the hospital governing body and is empowered to address events that involve multiple disciplines.	R	R	R	R
16-3-3	There must be documented, adequate administrative support to ensure evaluation of all aspects of trauma care	R	R	R	R
16-3-4	The TMD and TPM must have the authority and be empowered by the hospital governing body to lead the program	R	R	R	R
16-3-5	The TMD must have sufficient authority to set the qualifications for the trauma service members, including individuals in specialties that are routinely involved with the care of the trauma patient	R	R	R	
16-3-6	The TMD must have authority to recommend changes for the trauma panel based on performance review	R	R	R	
16-3-7	The peer review committee must be chaired by the TMD	R	R	R	
16-3-8	Representatives from general surgery, emergency medicine, orthopedics, and anesthesiology, critical care—and for Level I and II centers, neurosurgery, and radiology—actively participate in the trauma PIPS program and attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
16-3-9	Any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

16-3-10	The TMD, TPM, and liaisons in emergency medicine, orthopedics, and neurosurgery must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related education (CME or CE, as appropriate to the discipline), if not board eligible or board certified.	R	R		
16-3-11	The liaison in critical care must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related CME or through an internal educational process based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.	R	R		
16-3-12	The trauma center must demonstrate that all trauma patients can be identified for review	R	R	R	R
16-3-13	The trauma registry must submit the required data elements to the NTDB	R	R	R	
16-3-14	The trauma PIPS program must be supported by a registry and a reliable method of concurrent data collection that consistently obtains information necessary to identify opportunities for improvement	R	R	R	R
16-3-15	All trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-4	A trauma program must use clinical practice guidelines, protocols, and algorithms derived from evidenced-based validated resources in order to achieve the goal of using a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-5	All process and outcome measures must be documented within the trauma PIPS program's written plan and reviewed and updated at least annually	R	R	R	R
16-6-1	All trauma-related mortalities must be systematically reviewed and those mortalities with opportunities for improvement identified for peer review. 1. Total trauma-related mortality rates. Outcome measures for total, pediatric (younger than 15 years), and geriatric (older than 64 years) trauma encounters should be categorized as follows: a) DOA (pronounced dead on arrival with no additional resuscitation efforts initiated in the emergency department); b. DIED (died in the emergency department despite resuscitation efforts); c. In-hospital (including operating room). 2. Mortality rates by Injury Severity Scale (ISS) subgroups	R	R	R	
16-6-2	Trauma surgeon response to the emergency department for highest level of activation must be monitored, documented and reviewed	R	R	R	R

16-6-3	Criteria for all levels of trauma team activation (TTA) must be defined and reviewed annually	R	R	R	R
16-6-4	All TTAs must be categorized by the level of response and quantified by number and percentage	R	R	R	R
16-6-5	Trauma surgeon response time to other levels of TTA, and for back-up call response, should be monitored, documented and reviewed	R	R	R	
16-6-6	Response parameters for consultants addressing time-critical injuries (for example, epidural hematoma, open fractures, and hemodynamically unstable pelvic fractures) must be determined and monitored	R	R	R	
16-7-1	Rates of undertriage and overtriage must be monitored and reviewed quarterly	R	R	R	
16-7-2	Trauma centers admitting at least 100 pediatric trauma patients (≤ 14 years) annually require a pediatric-specific trauma PIPS program. Trauma centers admitting less than 100 pediatric trauma patients annually must review each case for timeliness and appropriateness of care	R	R		
16-7-3	All trauma patients who are diverted or transferred during the acute phase of hospitalization to another trauma center, acute care hospital, or specialty hospital (for example, burn center, reimplantation center, or pediatric trauma center) or patients requiring cardiopulmonary bypass or when specialty personnel are unavailable must be subjected to individual case review to determine the rationale for transfer, appropriateness of care, and opportunities for improvement. Follow-up from the center to which the patient was transferred should be obtained as part of the case review.	R	R	R	R
16-7-4	Instances in which the emergency department is left uncovered must be reviewed for timeliness of Emergency physician's response and appropriateness of care			R	
16-7-5	Trauma center diversion-bypass hours must be routinely monitored, documented, and reported, including the reason for initiating the diversion policy, and must not exceed 5 percent.	R	R	R	
16-7-6	All cases with neurologic injury must be monitored, and any case not transferred to higher level of care is subject to case review for timeliness of response and appropriateness of care			R	
16-7-7	<ul style="list-style-type: none"> • In-house anesthesia service (emergency department, intensive care unit, floor, and postanesthesia care unit) must be available for the care of trauma patients • Operating room delays involving trauma patients because of lack of anesthesia support services must be identified and reviewed to determine the reason for 	R	R	R	

	delay, adverse outcomes, and opportunities for improvement.				
16-7-8	Delay in operating room availability must be routinely monitored. Any case that is associated with a significant delay or adverse outcome must be reviewed for reasons for delay and opportunities for improvement.	R	R	R	
16-7-9	Response times of operating room and postanesthesia care unit personnel when responding from outside the trauma center must be routinely monitored.	R	R	R	
16-7-10	Rate of change in interpretation of radiologic studies should be categorized by RADPEER or similar criteria (describe process/scoring metric used).	R	R	R	
16-7-11	Response times of computed tomography technologist (30 minutes)/magnetic resonance imaging (60 minutes) technologist/interventional radiology team (30 minutes) when responding from outside the trauma center	R	R	R	
16-8	Transfers to a higher level of care within the institution	R	R	R	R
16-9-1	Solid organ donation rate	R	R	R	
16-9-2	The percentage of completed registry records within two months of discharge should be determined.	R	R	R	R
16-9-3	Multidisciplinary trauma peer review committee attendance	R	R	R	
16-9-4	Must admit at least 1,200 trauma patients yearly or have 240 admissions with an ISS of more than 15	R			
16-10	Sufficient mechanisms must be available to identify events for review by the trauma PIPS program	R	R	R	R
16-11	Once an event is identified, the trauma PIPS program must be able to verify and validate that event	R	R	R	R
16-12	There must be a process to address trauma program operational events	R	R	R	
16-13	Documentation (minutes) reflects the review of operational events and, when appropriate, the analysis and proposed corrective actions	R	R	R	
16-14-1	Mortality data, adverse events and problem trends, and selected cases involving multiple specialties must undergo multidisciplinary trauma peer review	R	R	R	
16-14-2	This effort may be accomplished in a variety of formats but must involve the participation and leadership of the TMD; the group of general surgeons on the call panel; and the liaisons from emergency medicine, orthopedics, neurosurgery, anesthesia, critical care, and radiology	R	R	R	
16-15	Each member of the committee must attend at least 50 percent of all multidisciplinary trauma peer review committee meetings	R	R	R	
16-16	When general surgeons cannot attend the multidisciplinary trauma peer review meeting, the TMD	R	R	R	

	must ensure that they receive and acknowledge the receipt of critical information generated at the multidisciplinary peer review meeting to close the loop				
16-17	The multidisciplinary trauma peer review committee must systematically review mortalities, significant complications, and process variances associated with unanticipated outcomes and determine opportunities for improvement	R	R	R	
16-18	When an opportunity for improvement is identified, appropriate corrective actions to mitigate or prevent similar future adverse events must be developed, implemented, and clearly documented by the trauma PIPS program	R	R	R	
16-19	An effective performance improvement program demonstrates through clear documentation that identified opportunities for improvement lead to specific interventions that result in an alteration in conditions such that similar adverse events are less likely to occur	R	R	R	
OUTREACH AND EDUCATION					
17-1	Engage in public and professional education	R	R	R	R
17-2	Trauma centers must provide some means of referral and access to trauma center resources	R	R		
17-3	Must have continuous rotations in trauma surgery for senior residents (Clinical PGY 4–5) that are part of an Accreditation Council for Graduate Medical Education–accredited program. For pediatric Level I centers, the continuous rotation for surgical residents is extended to include clinical PGY 3	R			
17-4-1	The hospital must provide a mechanism to offer trauma-related education to nurses involved in trauma care	R	R	R	
17-4-2	Resuscitation nurses must take initial 16 hour accredited course in the care of trauma patients followed by recertification or 4 hours/year of trauma-related continuing education	R	R	R	R
17-4-3	The successful completion of ATLS® course, at least once, is required for all general surgeons, emergency physicians and midlevel providers on the trauma team	R	R	R	R
17-4-4	The TD and the liaison representative from neurosurgery, orthopedic surgery, and emergency medicine must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, if not board eligible or board certified.	R	R		
17-4-5	The liaison representative from critical care must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, or through an internal educational process conducted by the trauma program	R	R		

	based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.				
17-4-6	Other members of the general surgery, neurosurgery, orthopedic surgery, emergency medicine and critical care specialties who take trauma call must also be knowledgeable and current in the care of injured patients.	R	R		
PREVENTION					
18-1	Trauma centers must have an organized and effective approach to injury prevention and must prioritize those efforts based on local trauma registry and epidemiologic data	R	R	R	R
18-2-1	Each trauma center must have someone in a leadership position that has injury prevention as part of his or her job description	R	R	R	R
18-2-2	This individual must be a prevention coordinator (separate from the TPM) with a job description and salary support	R			
18-3	Universal screening for alcohol use must be performed for all injured patients and must be documented	R	R	R	R
18-4	All patients who have screened positive must receive an intervention by appropriately trained staff, and this intervention must be documented	R	R		
18-5	At least two programs that address one of the major causes of injury in the community must be implemented	R	R		
18-6	A trauma center's prevention program must include and track partnerships with other community organizations	R	R		
TRAUMA RESEARCH AND SCHOLARSHIP					
19-1	A program must have 20 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period at a minimum	R			
19-2	These publications must result from work related to the trauma center or the trauma system in which the trauma center participates	R			
19-3	Of the 20 articles, at least one must be authored or co-authored by members of the general surgery trauma team	R			
19-4-1	Additionally, at least one article each from three of the following disciplines is required: basic sciences, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing	R			
19-4-2	A pediatric Level I center's research requirement is equivalent to that of adult Level 1 trauma centers	R			

19-4-3	In combined Level I adult and Level I pediatric centers, half of the research requirement must be pediatric research	R			
19-7	<p>In the alternate method, a Level I program must have the following: a) A program must have 10 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period. These articles must result from work related to the trauma center or the trauma system in which the trauma center participates. Of the 10 articles, at least one must be authored or co-authored by members of the general surgery trauma team, and at least one article each from three of the following disciplines is required: basic sciences as related to injury, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/ maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing. Trauma-related articles authored by members of other disciplines or work done in collaboration with other trauma centers and participation in multicenter investigations may be included in the remainder.</p> <p>b) Of the following seven trauma-related scholarly activities, four must be demonstrated: • Evidence of leadership in major trauma organizations, which includes membership in trauma committees of any of the regional or national trauma organizations. • Demonstrated peer-reviewed funding for trauma research from a recognized government or private agency or organization. • Evidence of dissemination of knowledge that includes review articles, book chapters, technical documents, Web-based publications, videos, editorial comments, training manuals, and trauma-related educational materials or multicenter protocol development. • Display of scholarly application of knowledge as evidenced by case reports or reports of clinical series in journals included in MEDLINE. • Participation as a visiting professor or invited lecturer at national or regional trauma conferences. • Support of resident participation in mentoring scholarly activity, including laboratory experiences; clinical trials; resident trauma paper competitions at the state, regional, or national level; and other resident trauma presentations. • Mentorship of fellows, as evidenced by the development or maintenance of a recognized trauma, critical care, or acute care surgery fellowship</p>	R			
19-8	The administration must demonstrate support for the research program by, for example, providing basic laboratory space, sophisticated research equipment, advanced information systems, biostatistical support,	R			

	salary support for basic and translational scientists, or seed grants for less experienced faculty				
DISASTER PLANNING AND MANAGEMENT					
20-1	Trauma centers must meet the disaster-related requirements of OAR 333-515-0030	R	R	R	R
20-2	A surgeon or delegate from the trauma panel must be a member of the hospital's disaster committee	R	R	R	
20-3	Hospital drills that test the individual hospital's disaster plan must be conducted at least twice a year, including actual plan activations that can substitute for drills	R	R	R	R
20-4	All trauma centers must have a hospital disaster plan described in the hospital's policy and procedure manual or equivalent	R	R	R	R
SOLID ORGAN PROCUREMENT ACTIVITIES					
21-1	The trauma center must have an established relationship with a recognized OPO	R	R	R	
21-2-1	A written policy must be in place for triggering notification of the regional OPO	R	R	R	
21-2-2	Must review its solid organ donation rate annually	R	R	R	
21-3	Written protocols defining the clinical criteria and confirmatory tests for the diagnosis of brain death are required	R	R	R	R

EXHIBIT 5

OAR Chapter 333, Division 200

OREGON CRITERIA for CONSIDERATION of TRANSFER to a LEVEL I or II TRAUMA CENTER

HEAD AND CENTRAL NERVOUS SYSTEM

- Penetrating injuries or open fracture of the skull
- GCS < 14 or lateralizing neurologic signs (if no neurosurgical consultation is available.)
- Spinal fracture or spinal cord deficit
- Carotid or vertebral arterial injury

CHEST

- More than two unilateral rib fractures or bilateral rib fractures with pulmonary contusion (if no critical care consultation is available)
- Torn thoracic aorta or great vessel
- Cardiac injury or rupture
- Bilateral pulmonary contusion with Pao₂:Flo₂ ratio less than 200 (require protracted ventilation)

ABDOMEN AND PELVIS

- Major abdominal vascular injury
- Grade IV or V liver injuries requiring transfusion
- Unstable pelvic fracture requiring transfusion
- Complex pelvis/acetabulum fractures
- Open pelvic injury

MULTIPLE SYSTEM INJURY

- Significant head injury combined with significant face, chest, abdominal, or pelvic injury
- Significant torso injury with advanced comorbid disease (such as coronary artery disease, chronic obstructive pulmonary disease, type 1 diabetes mellitus, or immunosuppression)
- Burns with associated injuries
- Fracture or dislocation with loss of distal pulses

SECONDARY DETERIORATION (LATE SEQUELAE)

- Patients requiring long term ventilation
- Sepsis
- Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)
- Major tissue necrosis

AMEND: 333-200-0265

NOTICE FILED DATE: 12/18/2023

RULE SUMMARY: Amend 333-200-0265

Trauma activation criteria in Exhibit 3 have been amended based on changes to the field triage criteria in Exhibit 2 and the American College of Surgeons, Resources for Optimal Care of the Injured Patient (2022 Standards). Exhibits 4 and 5 are not being amended but are included for reference. Amendments are only in Exhibit 3 and not in the rule text.

CHANGES TO RULE:

333-200-0265

Trauma System Hospital Responsibilities ¶¶

A trauma system hospital shall:¶¶

- (1) Be responsible for all expenses incurred by the hospital in planning, developing and participating in the trauma system, including attorney fees and costs;¶¶
- (2) Be responsible for all expenses incurred when a re-survey of the hospital is conducted by the ~~Authority~~Oregon Health Authority (Authority) or its designee(s);¶¶
- (3) Comply with all requirements in these rules, all current state and area trauma system standards, and all policies, protocols and procedures as set forth in the approved area trauma system plan;¶¶
- (4) Comply with any reasonable survey process that the Authority may utilize including but not limited to submission of information such as attestations, electronic medical records, and other documents determined necessary by the Authority to evaluate the hospital's trauma program;¶¶
- (5) Meet or exceed the standards for hospital resources as set forth in Exhibit 4 and hospital activation and transfer criteria as set forth in Exhibits 3 and 5;¶¶
- (6) Provide the resources, personnel, equipment and response required by these rules;¶¶
- (7) Provide care to trauma system patients which is consistent with the standards advocated by the Advanced Trauma Life Support Course, American College of Surgeons, Committee on Trauma;¶¶
- (8) Report to the Oregon Trauma Registry all required data as set forth in the Oregon Trauma Registry Abstract Manual for each and every trauma patient as defined in these rules:¶¶
 - (a) Data must be reported within 60 days of death or discharge of that patient; and¶¶
 - (b) Data shall be submitted in electronic media using a format prescribed by the Authority.¶¶
 - (c) The Authority may, at its sole discretion, permit data submission by alternative means where use of the Authority's prescribed format would impose a severe hardship on the reporting institution.¶¶
- (9) Participate in evaluation and research studies as prescribed by the Authority;¶¶
- (10) Record patient resuscitation data using the official state trauma resuscitation flow sheet. If using a form other than the official form, that form must contain at least the same information; and¶¶
- (11) Identify and submit to the Authority the name of the individual that will serve as the Trauma Registrar, Trauma Coordinator or Trauma Program Manager, and Trauma Medical Director. Any changes to persons serving in these roles must be reported to the Authority within 60 days.

Statutory/Other Authority: ORS 431A.065, ORS 431A.085

Statutes/Other Implemented: ORS 431A.060, ORS 431A.065, ORS 431A.085, ORS 431A.090

RULE ATTACHMENTS MAY NOT SHOW CHANGES. PLEASE CONTACT AGENCY REGARDING CHANGES.

EXHIBIT 3
OAR chapter 333, division 200

OREGON HOSPITAL TRAUMA TEAM ACTIVATION CRITERIA

<ul style="list-style-type: none">• Confirmed blood pressure less than 90 mmHg at any time in adults, and age-specific hypotension in children aged 0-9 years less than 70 mmHg + (2 x age years)• All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee• Glasgow Coma Scale less than 9 (with mechanism attributed to trauma)• Transfer patients from another hospital who require ongoing blood transfusions• Patients intubated in the field and directly transported to the trauma center• Patients who have respiratory compromise or are in need of an emergent airway <p>Emergency physician's discretion</p>	<p>YES</p> <p>→</p> <p>Activate Full Trauma Team</p>	<p style="text-align: center;">Full Trauma Team</p> <ul style="list-style-type: none">- General Surgeon- Emergency Physician- Emergency Nurse(s)- Laboratory- Radiology- Respiratory Therapist <p><u>Response times from patient arrival:</u></p> <p>Level I & II – 15 minutes Level III & IV – 30 minutes</p>
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Oregon Hospital Trauma Team Activation Criteria (continued)

- Glasgow Coma Scale of 9 - 13
- Chest wall instability, deformity, or suspected flail chest
- Suspected fracture of two or more proximal long bones (humerus or femur)
- Suspected spinal cord injury with motor sensory deficit
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Skull deformity, suspected skull fracture
- Suspected pelvic fracture
- Falls from a height greater than 10 feet (all ages)
- High-risk auto crash
 - Partial or complete ejection
 - Significant intrusion including roof: greater than 12 inches occupant site; **OR** greater than 18 inches any site; **OR** need for extrication for entrapped patient
 - Death in passenger compartment
 - Child (age 0-9 years) unrestrained or in unsecured child safety seat
 - Vehicle telemetry data consistent with severe injury
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)

Emergency physician's discretion

Consider risk factors, including:

- Low-level falls in young children (age 0-5 years) or older adults (age 65 years or greater) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy greater than 20 weeks
- Burns in conjunction with trauma
- Systolic blood pressure (SBP) less than 110 mmHg **OR** heart rate greater than SBP (age 65 years or greater)
- Children should be triaged preferentially to pediatric capable trauma centers

YES



**Activate
Modified
Trauma
Team**

Modified Trauma Team

- Emergency Physician
- Emergency Nurse(s)
- Laboratory
- Radiology

EXHIBIT 4

OAR Chapter 333, Division 200

OREGON TRAUMA HOSPITAL RESOURCE STANDARDS

Acronym Legend:

ATLS	Advance Trauma Life Support®	OPO	Organ Procurement Organization
CME	Continuing Medical Education	PACU	Post Anesthesia Care Unit
CRNA	Certified Nurse Anesthetist	PIPS	Performance Improvement & Patient Safety
CT	Computed Tomography	PGY	Post Graduate Year
ICU	Intensive Care Unit	TBI	Traumatic Brain Injury
ISS	Injury Severity Score	TMD	Trauma Medical Director
MRI	Magnetic Resonance Imaging	TPM	Trauma Program Manager
NTDB	National Trauma Data Bank	TTA	Trauma Team Activation
NTDS	National Trauma Data Standard	MOC	Maintenance of Certification

R = Required standard for the applicable category
 ■ = Standard not required

Tag	Standard/Chapter	Level	Level	Level	Level
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
TRAUMA SYSTEMS					
1-1	Active engagement of Trauma Center and their healthcare providers	R	R	R	R
1-2	Regional Trauma System engagement with standardization, implementation and performance improvement and patient safety (PIPS)	R	R	R	R
1-3	State and Regional Trauma System development and improvement	R	R	R	R
TRAUMA CENTER DESCRIPTION and THEIR ROLES IN A TRAUMA SYSTEM					
2-1	Trauma center must have an integrated, concurrent PIPS program to ensure optimal care and continuous improvement in care	R	R	R	R
2-2	Surgical commitment	R	R	R	■
2-3	Trauma centers must be able to provide the necessary human and physical resources (physical plant and equipment) to properly administer acute care consistent with their level of categorization	R	R	R	R
2-4	Trauma center must admit at least 1,200 trauma patients yearly or have 240 admissions with an Injury Severity Score (ISS) of more than 15	R	■	■	■
2-5	Through the trauma PIPS program and hospital policy, the trauma medical director (TMD) must have responsibility and authority for determining each general	R	R	R	■

	surgeon's ability to participate on the trauma panel based on an annual review				
2-6-1	Qualified attending surgeons must participate in major therapeutic decisions, be present in the emergency department for major resuscitations, be present at operative procedures, and be actively involved in the critical care of all seriously injured patients	R	R		
2-6-2	A resident in postgraduate year 4 or 5 or an attending emergency physician who is part of the trauma team may be approved to begin resuscitation while awaiting the arrival of the attending surgeon but cannot independently fulfill the responsibilities of, or substitute for, the attending surgeon	R	R		
2-7	The presence of such a resident or attending emergency physician may allow the attending surgeon to take call from outside the hospital. In this case, local criteria and a PIPS program must be established to define conditions requiring the attending surgeon's immediate hospital presence	R	R		
2-8-1	It is expected that the surgeon will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time for the highest-level activation tracked from patient arrival for Level I and II trauma centers is 15 minutes, and 30 minutes for Level III trauma centers. The program must demonstrate that the surgeon's presence is in compliance at least 80 percent of the time	R	R	R	
2-8-2	It is expected that the physician (if available) or midlevel provider will be in the emergency department on patient arrival, with adequate notification from the field. The maximum acceptable response time is 30 minutes for the highest level of activation, tracked from patient arrival. The PIPS program must demonstrate that the physician's (if available) or midlevel provider's presence is in compliance at least 80 percent of the time				R
2-9	The attending surgeon's immediate (within 15 minutes) arrival for patients with appropriate activation criteria must be monitored by the hospital's trauma PIPS program	R	R		
2-10	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
2-11	A published backup call schedule for trauma surgery must be available	R	R		
2-12	Continuous general surgical coverage			R	
2-13-1	Well-defined transfer plans are essential			R	R
2-13-2	Collaborative treatment and transfer guidelines reflecting the Level IV facilities' capabilities must be developed and				R

	regularly reviewed, with input from higher-level trauma centers in the region				
2-14	24-hour emergency coverage by a physician or midlevel provider				R
2-15	The emergency department must be continuously available for resuscitation with coverage by a registered nurse and physician or midlevel provider, and it must have a physician director				R
2-16	Emergency department providers that are not board certified in emergency medicine must maintain current Advanced Trauma Life Support® (ATLS®) certification as part of their competencies in trauma				R
2-17	There is a TMD and trauma program manager (TPM) knowledgeable and involved in trauma care that work together with guidance from the trauma peer review committee to identify events, develop corrective action plans, and ensure methods of monitoring, reevaluation, and benchmarking.	R	R	R	R
2-18	Multidisciplinary trauma peer review committee must meet regularly, with required attendance of medical staff active in trauma resuscitation, to review systemic and care provider issues, as well as propose improvements to the care of the injured	R	R	R	R
2-19	PIPS program must have audit filters to review and improve pediatric and adult patient care	R	R	R	R
2-20	Because of the greater need for collaboration with receiving trauma centers, trauma center must actively participate in regional or statewide trauma system meetings and committees that provide oversight				R
2-21	Trauma center must be the local trauma authority and participate in the provision of training for prehospital and hospital-based providers				R
2-22	Facility must participate in regional disaster management plans and exercises	R	R	R	R
2-23	Any adult trauma center that annually admits to the hospital 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating their capability to care for injured children: trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R	R	
2-24	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R	R	
2-25	For adult trauma centers annually admitting to the hospital fewer than 100 injured children younger than 15 years, these resources are desirable. These hospitals,	R	R	R	

	however, must review the care of their injured children through their PIPS program				
PREHOSPITAL TRAUMA CARE					
3-1	The trauma program must participate in the training of prehospital personnel, the development and improvement of prehospital care protocols, and PIPS programs	R	R	R	R
3-2	The protocols that guide prehospital trauma care must be established by the trauma health care team, including surgeons, emergency physicians, medical directors for EMS agencies, and basic and advanced prehospital personnel	R	R	R	R
3-3	Rigorous multidisciplinary performance improvement is essential to evaluate overtriage and undertriage rates to attain the optimal goal of less than 5 percent undertriage	R	R	R	
3-4	The TMD must be involved in the development of the trauma center's bypass (diversion) protocol	R	R	R	
3-5	The trauma surgeon must be involved in the decision regarding bypass (diversion) each time the center goes on bypass	R	R	R	
3-6	The trauma center must not be on bypass (diversion) more than 5 percent of the time	R	R	R	
3-7	When a trauma center is required to go on bypass or to divert, the center must have a system to notify dispatch and EMS agencies. The center must do the following: <ul style="list-style-type: none"> • Prearrange alternative destinations with transfer agreements in place; • Notify other centers of divert or advisory status; - Maintain a divert log; and • Subject all diverts and advisories to performance improvement procedures 	R	R	R	R
INTERHOSPITAL TRANSFERS					
4-1	Direct physician-to-physician contact is essential	R	R	R	R
4-2	The decision to transfer an injured patient to a specialty care facility in an acute situation must be based solely on the needs of the patient and not on the requirements of the patient's specific provider network (for example, a health maintenance organization or a preferred provider organization) or the patient's ability to pay	R	R	R	
4-3-1	A very important aspect of interhospital transfer is an effective PIPS program that includes evaluating transport activities	R	R	R	R
4-3-2	Perform a PIPS review of all transfers out	R	R	R	R
HOSPITAL ORGANIZATION and the TRAUMA PROGRAM					

5-1-1	A decision by a hospital to become a trauma center requires the commitment of the institutional governing body and the medical staff	R	R	R	R
5-1-2	Documentation of administrative commitment is required from the governing body and the medical staff	R	R	R	R
5-2	This [administrative] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-3	The [medical staff] support must be reaffirmed continually (every 3 years) and must be current at the time of categorization	R	R	R	R
5-4	The trauma program must involve multiple disciplines and transcend normal departmental hierarchies	R	R	R	
5-5-1	The TMD must be a current board-certified general surgeon (or a general surgeon eligible for certification by the American Board of Surgery according to current requirements) or a general surgeon who is an American College of Surgeons Fellow with a special interest in trauma care and must participate in trauma call	R	R	R	
5-5-2	TMD is a physician practicing emergency medicine, responsible for coordinating the care of injured patients, verifies continuing medical education (CME) of personnel, and has oversight of the trauma quality improvement process. The TMD is clinically involved with trauma patient management and responsible for credentialing of trauma team members.				R
5-6	The TMD must be current in ATLS®	R	R	R	R
5-7	The TMD must maintain an appropriate level of trauma-related extramural CME (12 hours annually, or 36 hours in 3 years)	R	R		
5-8	Membership and active participation in regional or national trauma organizations are essential for the TMD in Level I and II trauma centers and are desirable for TMDs in Level III and IV facilities	R	R		
5-9	The TMD must have the authority to manage all aspects of trauma care	R	R	R	
5-10	The TMD must chair and attend a minimum of 50% of the multidisciplinary trauma peer review committee meetings.	R	R	R	
5-11-1	The TMD, in collaboration with TPM, must have the authority to correct deficiencies in trauma care and exclude from trauma call the trauma team members who do not meet specified criteria	R	R	R	
5-11-2	In addition, the TMD must perform an annual assessment of the trauma panel providers in the form of Ongoing Professional Practice Evaluation (OPPE) and Focused	R	R	R	

	Professional Practice Evaluation (FPPE) when indicated by findings of the PIPS process				
5-12	The TMD must have the responsibility and authority to ensure compliance with the above requirements and cannot direct more than one trauma center	R	R	R	
5-13	The criteria for a graded activation must be clearly defined by the trauma center, with the highest level of activation including the six required criteria listed in Exhibit 3.	R	R	R	R
5-14	Trauma centers highest level of activation requires the response of the full trauma team within 15 minutes of arrival of the patient, and the criteria should include physiologic criteria and some or several of the anatomic criteria	R	R		
5-15	Trauma centers team must be fully assembled within 30 minutes			R	R
5-16-1	Other potential criteria for trauma team activation that have been determined by the trauma program to be included in the various levels of trauma activation must be evaluated on an ongoing basis in the PIPS process to determine their positive predictive value in identifying patients who require the resources of the full trauma team.	R	R	R	R
5-16-2	The emergency physician may initially evaluate the limited-tier trauma patient, but the center must have a clearly defined response expectation for the trauma surgical evaluation of those patients requiring admission	R	R	R	
5-17-1	Seriously injured patients must be admitted to, or evaluated by, an identifiable surgical service staffed by credentialed trauma providers	R	R		
5-17-2	Injured patients may be admitted to individual surgeons, but the structure of the program must allow the TMD to have oversight authority for the care of these patients.			R	
5-18	Programs that admit more than 10% of injured patients to non-surgical services must review all non-surgical admissions through the trauma PIPS process	R	R	R	
5-19	Sufficient infrastructure and support to ensure adequate provision of care must be provided for this service	R	R		
5-20	In teaching facilities, the requirements of the residency review committees must be met	R	R		
5-21	There must be a method to identify the injured patients, monitor the provision of health care services, make periodic rounds, and hold formal and informal discussions with individual practitioners			R	
5-22	In addition to administrative ability, the TPM must show evidence of educational preparation and clinical experience in the care of injured patients	R	R	R	

5-23-1	There must be a minimum of 1.0 FTE TPM or Trauma Coordinator dedicated to the trauma program for trauma centers with ≥ 250 patients per year	R	R	R	R
5-23-2	A proportionate FTE Trauma Coordinator must be employed for trauma centers with < 250 patients per year			R	R
5-24-1	The TPM or Trauma Coordinator must show evidence of educational preparation, with a minimum of 16 hours per year (internal or external) of trauma-related continuing education and clinical experience in the care of injured patients	R	R	R	
5-24-2	The Trauma Coordinator must show evidence of educational preparation with a minimum of 4 hours per year (internal or external) of trauma-related continuing education and has completed an accredited course in the care of trauma patients				R
5-25	The trauma center's PIPS program must have a multidisciplinary trauma peer review committee chaired by the TMD	R	R	R	
CLINICAL FUNCTIONS – GENERAL SURGERY					
6-1	General surgeons caring for trauma patients must meet certain requirements, as described herein. These requirements may be considered to be in four categories: current board certification, clinical involvement, PIPS, and education.	R	R	R	
6-2	Board certification or eligible for certification by the American Board of Surgery according to current requirements or the alternate pathway as described by the American College of Surgeons (ACS) is essential for general surgeons who take trauma call.	R	R	R	
6-3	Non-board certified surgeons meet alternate criteria as described by ACS	R	R	R	
6-4	Trauma surgeons must have privileges in general surgery	R	R	R	
6-5	The trauma surgeon on call must be dedicated to a single trauma center while on duty	R	R		
6-6-1	A published backup call schedule for trauma surgery must be available	R	R		
6-6-2	Maximum acceptable response time is 15 minutes for Level I and Level II; 30 minutes for Level III and Level IV. Response time is tracked from patient arrival rather than from notification or activation. 80% attendance threshold must be met for highest level of activation.	R	R	R	R
6-7-1	The attending surgeon is expected to be present in the operating room for all operations. A mechanism for documenting this presence is essential	R	R	R	
6-7-2	There must be a multidisciplinary trauma peer review committee chaired by the TMD with representatives	R	R	R	

	from: general surgery, orthopedic surgery, emergency medicine, ICU, and anesthesia – and for Level I and Level II trauma centers, neurosurgery and radiology. Liaisons from orthopedic surgery, emergency medicine, ICU, anesthesiology, neurosurgery, and radiology must attend a minimum of 50% of the meetings with appropriate documentation.				
6-8	Each member of the group of general surgeons must attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
6-9-1	All general surgeons on the trauma team must have successfully completed the ATLS® course at least once	R	R	R	R
6-9-2	The TMD must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME	R	R		
6-10-1	Trauma surgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board maintenance of certification (MOC) requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other general surgeons who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.	R	R	R	
6-10-2	General surgeons in a Level IV trauma hospital who take trauma call must be knowledgeable and current in the care of injured patients. This requirement must be met by the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – EMERGENCY MEDICINE					
7-1-1	The emergency department must have a designated emergency physician director supported by an appropriate number of additional physicians to ensure immediate care for injured patients	R	R	R	
7-1-2	The emergency department must have a designated emergency physician director supported by an				R

	appropriate number of additional providers to ensure immediate care for injured patients				
7-2	An emergency physician must be present in the department at all times	R	R		
7-3	Occasionally, it is necessary for the physician to leave the emergency department for short periods to address in-house emergencies. Such cases and their frequency must be reviewed by the PIPS program to ensure that this practice does not adversely affect the care of patients in the emergency department			R	
7-4	In institutions in which there are emergency medicine residency training programs, supervision must be provided by an in-house attending emergency physician 24 hours per day	R	R	R	
7-5	These roles and responsibilities must be defined, agreed on, and approved by the TMD	R	R	R	
7-6-1	Board certification or eligibility for certification by the appropriate emergency medicine board according to current requirements or the alternate pathway is essential for physicians staffing the emergency department and caring for trauma patients	R	R	R	
7-6-2	Non-board certified emergency medicine physicians meet alternate criteria as described by ACS	R	R	R	
7-7	Emergency physicians on the call panel must be regularly involved in the care of injured patients	R	R	R	
7-8	A representative from the emergency department must participate in the prehospital PIPS program	R	R	R	
7-9	A designated emergency physician liaison must be available to the TMD for PIPS issues that occur in the emergency department	R	R	R	
7-10	Emergency physicians must participate actively in the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
7-11	The emergency medicine liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee meetings	R	R	R	
7-12	The liaison from emergency medicine must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
7-13-1	Emergency physicians participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME). Other emergency physicians who are not actively enrolled in the board MOC process, must meet this	R	R	R	

	requirement by documenting the acquisition of 12 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program.				
7-13-2	Emergency physicians in Level IV trauma hospital who participate on the trauma team also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 8 hours of trauma-related CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
7-14	All board-certified emergency physicians or those eligible for certification by an appropriate emergency medicine board according to current requirements must have successfully completed the ATLS course at least once	R	R	R	R
7-15	Physicians who are certified by boards other than emergency medicine who treat trauma patients in the emergency department are required to have current ATLS status	R	R	R	R
CLINICAL FUNCTIONS – NEUROSURGERY					
8-1	Neurotrauma is organized and led by a highly experienced and devoted neurosurgeon. If this surgeon is not the director of the neurosurgery service, a neurologic surgeon liaison must be designated	R	R		
8-2	Neurotrauma care must be continuously available for all TBI and spinal cord injury patients and must be present and respond within 30 minutes based on institutional-specific criteria	R	R		
8-3	A reliable, published neurotrauma call schedule must be provided with formally arranged contingency plans in case the capability of the neurosurgeon, hospital, or system to care for neurotrauma patients is overwhelmed	R	R		
8-4	The center must have a predefined and thoroughly developed neurotrauma diversion plan that is implemented when the neurosurgeon on call becomes encumbered. A predefined, thoroughly developed neurotrauma diversion plan must include the following: <ul style="list-style-type: none"> • Emergency medical services notification of neurosurgery advisory status/diversion; • A thorough review of each instance by the PIPS program; and 	R	R		

	<ul style="list-style-type: none"> Monitoring of the efficacy of the process by the PIPS program 				
8-5	<p>A formal, published contingency plan must be in place for times in which a neurosurgeon is encumbered upon the arrival of a neurotrauma case. The contingency plan must include the following:</p> <ul style="list-style-type: none"> A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the neurotrauma patient; Transfer agreements with a similar or higher-level verified trauma center; Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support; and Monitoring of the efficacy of the process by the PIPS program. 	R	R	R	
8-6-1	If one neurosurgeon covers two centers within the same limited geographic area, there must be a published backup schedule	R	R	R	
8-6-2	The performance improvement process must demonstrate that appropriate and timely care is provided	R	R	R	
8-7	There must be a plan approved by the TMD that determines which types of neurosurgical injuries may remain and which should be transferred			R	
8-8	Transfer agreements must exist with appropriate Level I and Level II trauma centers			R	
8-9	In all cases, whether patients are admitted or transferred, the care must be timely, appropriate, and monitored by the PIPS program			R	
8-10-1	Board certification or eligibility for certification by an appropriate neurosurgical board according to the current requirements or the alternate pathway is essential for neurosurgeons who take trauma call	R	R	R	
8-10-2	Alternate Criteria for Non-Board Certified Neurosurgeons	R	R	R	
8-11	Qualified neurosurgeons should be regularly involved in the care of patients with head and spinal cord injuries and must be credentialed by the hospital with general neurosurgical privileges	R	R		
8-12	The neurosurgery service must participate actively in the overall trauma PIPS program	R	R		
8-13-1	The neurosurgery liaison on the multidisciplinary trauma peer review committee must attend a minimum of 50 percent of the committee's meetings	R	R		
8-13-2	Centers with any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

8-14	The liaison representative from neurosurgery must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
8-15-1	Neurosurgeons participating on the trauma call panel must demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) Other neurosurgeons participating in trauma call who are not actively enrolled in the board MOC process, must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program	R	R		
8-15-2	If a Level III trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).			R	
8-15-3	If a Level IV trauma hospital is providing this service, other neurosurgeons participating in trauma call also must be knowledgeable and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the neurosurgical liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				R
CLINICAL FUNCTIONS – ORTHOPEDIC SURGERY					
9-1	Because of their skills and training in the management of the acute and rehabilitation phases of musculoskeletal trauma, physical and occupational therapists and rehabilitation specialists are essential	R	R		

9-2	Operating rooms must be promptly available to allow for emergency operations on musculoskeletal injuries, such as open fracture debridement and stabilization, external fixator placement, and compartment decompression	R	R	R	
9-3	A system must be organized so that musculoskeletal trauma cases can be scheduled without undue delay and not at inappropriate hours that might conflict with more urgent surgery or other elective procedures	R	R		
9-4	There must be an orthopedic surgeon who is identified as the liaison to the trauma program	R	R	R	
9-5-1	Orthopedic care must be overseen by an individual who has completed a fellowship in orthopedic traumatology approved by the Orthopedic Trauma Association (OTA)	R			
9-5-2	In a pediatric trauma center this requirement may be met by having formal transfer agreements that specify which cases will be transferred for high level orthopedic oversight and assuring that all such transfers (or potential transfers) are reviewed as part of the performance improvement process.				
9-6	Orthopedic team members must have dedicated call at their institution or have an effective backup call system	R	R		
9-7	Orthopedic team members must be available in the trauma resuscitation area within 30 minutes after consultation has been requested by the surgical trauma team leader for multiply injured patients based on institution-specific criteria.	R	R		
9-8	The performance improvement process must ensure that care is timely and appropriate	R	R		
9-9	If the on-call orthopedic surgeon is unable to respond promptly, a backup consultant on-call surgeon must be available	R	R		
9-10-1	The design of this system is the responsibility of the orthopedic trauma liaison but must be approved by the TMD	R	R		
9-10-2	All necessary resources for modern musculoskeletal trauma care must be provided including instruments, equipment, and personnel, along with readily available operating rooms for musculoskeletal trauma procedures	R	R		
9-11	An orthopedic surgeon must be on call and promptly available 24 hours a day			R	
9-12	If the orthopedic surgeon is not dedicated to a single facility while on call, then a published backup schedule is required			R	
9-13	The PIPS process must review the appropriateness of the decision to transfer or retain major orthopedic trauma cases			R	

9-14	There must be protocols for the following orthopedic emergencies: 1) the type and severity of pelvic and acetabular fractures that will be treated at the institutions as well as those that will be transferred out for care; 2) the timing and sequence for the treatment of long bone fractures in multiply injured patients; and 3) the wash out time for open fractures. These protocols must be included as part of the PIPS process	R	R		
9-15	The orthopedic service must participate actively with the overall trauma PIPS program and the multidisciplinary trauma peer review committee	R	R	R	
9-16	The orthopedic liaison to the trauma PIPS program must attend a minimum of 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
9-17-1	Board certification or eligibility for certification by an appropriate orthopedic board according to the current requirements, or the alternate pathway is essential for orthopedic surgeons who take trauma call	R	R	R	
9-17-2	Alternate Criteria for Non- Board Certified Orthopedic Surgeons	R	R	R	
9-18	The orthopedic surgical liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, if not board eligible or board certified.	R	R		
9-19-1	Orthopedic surgeons participating on the trauma call panel must demonstrate evidence on ongoing trauma-related education. Staying current with board MOC is an acceptable method of ongoing trauma-related education. Other members of the orthopedic trauma team who are not actively enrolled in the board MOC process must meet this requirement by the acquisition of 12 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program	R	R	R	
9-19-2	If a Level IV trauma hospital provides this service, other members of the orthopedic trauma team must be knowledgeable about and current in the care of injured patients. This requirement may be documented by the acquisition of 8 hours of trauma-related CME per year on average or through an internal educational process conducted by the trauma program and the orthopedic liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC				R

	requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).				
PEDIATRIC TRAUMA CARE					
Trauma hospitals seeking categorization as a Level I or Level II Pediatric Trauma Center shall meet the following pediatric trauma care standards.					
10-1-1	Hospitals that pursue categorization as pediatric trauma centers must meet the same resource requirements as adult trauma centers, in addition to pediatric resource requirements.	R	R		
10-1-2	A Level I pediatric trauma center must annually admit 200 or more injured children younger than 15 years	R			
10-2	A Level II pediatric trauma center must annually admit 100 or more injured children younger than 15 years		R		
10-3	All Level I and II pediatric trauma centers must have a dedicated pediatric trauma program manager	R	R		
10-4	All Level I and II pediatric trauma centers must have a pediatric trauma registrar	R	R		
10-5	In a Level I pediatric trauma center, the pediatric trauma program manager must be a full-time position dedicated to the pediatric trauma service	R			
10-6	All pediatric trauma centers must have a pediatric trauma performance improvement and patient safety (PIPS) program	R	R		
10-7	In addition, all pediatric trauma centers must have the following programs: pediatric rehabilitation, child life and family support programs, pediatric social work, child protective services, pediatric injury prevention, community outreach, and education of health professionals and the general public in the care of pediatric trauma patients	R	R		
10-8	Level I and II pediatric trauma centers must have a mechanism in place to assess children for maltreatment	R	R		
10-9	Level I pediatric trauma centers must have identifiable pediatric trauma research	R			
10-10	The pediatric Level I center's research requirement is equivalent to that of adult Level I trauma centers	R			
10-11	In combined Level I adult and pediatric centers, half of the research requirement must be pediatric research	R			
10-12	A Level I pediatric trauma center must have at least two surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgery	R			
10-13	On staff, there must be one board-certified surgeon or one surgeon eligible for certification by an appropriate orthopedic board according to the current requirements	R			

	of that board who also has had pediatric fellowship training				
10-14	Additionally, there must be on staff at least one board-certified surgeon or one surgeon eligible for certification by an appropriate neurosurgical board according to current requirements of that board who also has had pediatric fellowship training	R			
10-15	There must be one additional board-certified orthopedic surgeon or surgeon eligible for certification by an appropriate orthopedic board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-16	There must be one additional board-certified neurosurgeon or surgeon eligible for certification by an appropriate neurosurgical board according to the current requirements of that board, who is identified with demonstrated interests and skills in pediatric trauma care	R			
10-17	There must be two physicians who are board certified or eligible for certification in pediatric critical care medicine, according to current requirements in pediatric critical care medicine: or in pediatric surgery and surgical critical care by the American Board of Surgery	R			
10-18	There must be two physicians who are board certified or eligible for certification by an appropriate emergency medicine board according to current requirements in pediatric emergency medicine	R			
10-19	The pediatric intensive care unit must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-20	The pediatric section of the emergency department must be staffed by individuals credentialed by the hospital to provide pediatric trauma care in their respective areas	R	R		
10-21	In a Level II pediatric trauma center, there must be at least one pediatric surgeon who is board-certified or eligible for certification by the American Board of Surgery according to current requirements in pediatric surgeon		R		
10-22	There must be one surgeon who is board-certified or eligible for certification by an appropriate orthopedic board identified with demonstrated interests and skills in pediatric trauma care		R		
10-23	There must be one surgeon who is board-certified or eligible for certification by an appropriate neurosurgical board identified with demonstrated interests and skills in pediatric trauma care		R		
10-24	In a Level I pediatric trauma center, the pediatric trauma medical director must be board certified or eligible for certification by the American Board of Surgery according	R			

	to current requirements for pediatric surgery or alternatively, a pediatric surgeon who is a Fellow of the American College of Surgeons with a special interest in pediatric trauma care, and must participate in trauma call				
10-25	In a Level II pediatric trauma center, the pediatric trauma medical director should be a board-certified pediatric surgeon or a surgeon eligible for certification by the American Board of Surgery according to current requirements for pediatric surgeons. This individual must be a board-certified general surgeon or a general surgeon eligible for certification by the American Board of Surgery according to current requirements qualified to serve on the pediatric trauma team as defined in the following paragraph		R		
10-26	When the number of pediatric surgeons on staff is too few to sustain the pediatric trauma panel, general surgeons who are board certified or eligible for certification by the American Board of Surgery according to current requirements may serve on the pediatric trauma team. In this circumstance, they must be credentialed by the hospital to provide pediatric trauma care, be members of the adult trauma panel, and be approved by the pediatric trauma medical director	R	R		
10-27	At a minimum, a Level I pediatric trauma center must have continuous rotations in trauma surgery for senior residents (Clinical PGY 3–5) who are part of an Accreditation Council for Graduate Medical Education–accredited program	R			
10-28	At a minimum, these rotations should include residency programs in all the following specialties: general surgery, orthopedic surgery, emergency medicine, and neurosurgery. They may also include support of a pediatric surgical fellowship	R			
10-29	In Level I and II pediatric trauma centers, other specialists (in anesthesiology, neurosurgery, orthopedic surgery, emergency medicine, radiology, and rehabilitation) providing care to injured children who are not pediatric-trained providers also should have sufficient training and experience in pediatric trauma care and be knowledgeable about current management of pediatric trauma in their specialty. The program must make specialty-specific pediatric education available for these specialists	R	R		
10-30	An organized pediatric trauma service led by a pediatric trauma medical director must be present in Level I and II pediatric trauma centers	R	R		

10-31	The pediatric trauma service must maintain oversight of the patient's management while the patient is in the intensive care unit	R	R		
10-32	The trauma service should work collaboratively with the pediatric critical care providers, although all significant therapeutic decisions must be approved by the trauma service, and the service must be made aware of all significant clinical changes	R	R		
10-33	The surgical director of the pediatric intensive care unit must participate actively in the administration of the unit, as evidenced by the development of pathways and protocols for care of surgical patients in the intensive care unit and in unit-based performance improvement and should be board-certified in surgical critical care	R	R		
10-34-1	Pediatric surgeons or trauma surgeons with pediatric privileges must be included in all aspects of the care of injured children admitted to an intensive care unit	R	R		
10-34-2	Any adult trauma center that annually admits 100 or more injured children younger than 15 years must fulfill the following additional criteria demonstrating its capability to care for the injured child	R	R		
10-34-3	The trauma surgeons must be credentialed for pediatric trauma care by the hospital's credentialing body	R	R		
10-34-4	There must be a pediatric emergency department area, a pediatric intensive care area, appropriate resuscitation equipment, and a pediatric-specific trauma PIPS program	R	R		
10-34-5	For adult trauma centers admitting fewer than 100 injured children younger than 15 years per year, these resources are desirable. These hospitals, however, must review the care of all injured children through their PIPS programs	R	R		
10-35	Level I and II pediatric trauma centers must submit data to the National Trauma Data Bank® (NTDB®)	R	R		
10-36	There must be a trauma peer review committee chaired by the pediatric trauma medical director with participation by the pediatric /general surgeons and liaisons from pediatric/general surgery, orthopedic surgery, neurosurgery, emergency medicine, pediatric critical care medicine, anesthesia, and radiology to improve trauma care by reviewing selected deaths, complications, and sentinel events with the objectives of identification of issues and appropriate responses	R	R		
10-37	The aforementioned representatives must attend at least 50% of the trauma peer review meetings, and their attendance must be documented	R	R		

10-38	All pediatric and general surgeons on the pediatric trauma panel treating children must attend at least 50% of the trauma peer review meetings	R	R		
10-39	In level I and II pediatric trauma centers, the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine demonstrate evidence of ongoing trauma-related education. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME) If the pediatric trauma medical director and the liaisons from neurosurgery, orthopedic surgery, emergency medicine, and critical care medicine are not actively enrolled in the board MOC process, each must each accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external CME, of which at least 9 hours (in 3 years) must be related to clinical pediatric trauma care	R	R		
10-40	The other general surgeons, orthopedic surgeons, neurosurgeons, emergency medicine physicians, and critical care medicine physicians who take trauma call in Level I and II pediatric trauma centers also must be knowledgeable and current in the care of injured patients. This requirement may be met by documenting the acquisition of 12 hours of CME per year on average or by demonstrating participation in an internal educational process conducted by the trauma program based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME).	R	R		

COLLABORATIVE CLINICAL SERVICES

For purposes of the following collaborative clinical service standards, a Level IV trauma center shall meet the prescribed standard if the Level IV provides the service. This is noted by the following symbol:



11-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for emergency operations	R	R	R	R
11-2-1	Consults for anesthesiology services are critical in the management of severely injured patients and must be available within 30 minutes from notification for managing airway problems	R	R	R	R

11-2-2	Anesthesiology services must be present at full team activation within 15 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.	R	R		
11-2-3	Anesthesiology services must be present at full team activation within 30 minutes from patient arrival when requested by a physician or an advanced practitioner directing the trauma.			R	R
11-3-1	The anesthetic care of injured patients must be organized and supervised by an anesthesiologist who is highly experienced and committed to the care of injured patients and who serves as the designated liaison to the trauma program	R	R		
11-3-2	A qualified and dedicated physician anesthesiologist must be designated as the liaison to the trauma program	R	R		
11-3-3	A qualified anesthesiology provider must be designated as the liaison to the trauma program.			R	R
11-4	Anesthesia services must be available in-house 24 hours a day	R	R		
11-5	When anesthesiology senior residents or CRNAs are used to fulfill availability requirements, the attending anesthesiologist on call must be advised, available within 30 minutes at all times, and present for all operations	R	R		
11-6	The availability of anesthesia services and delays in airway control or operations must be documented by the hospital PIPS process	R	R	R	R
11-7	Anesthesiologists or CRNAs must be available within 30 minutes			R	R
11-8	Trauma centers without in-house anesthesia services must have protocols in place to ensure the timely arrival at the bedside by the anesthesia provider within 30 minutes of notification and request.			R	R
11-9	Under these circumstances, the presence of a physician skilled in emergency airway management must be documented			R	R
11-10	All anesthesiologists taking call must have successfully completed an anesthesia residency program	R	R		
11-11-1	The anesthesiologist liaison taking call must be currently board certified or eligible for certification by an appropriate anesthesia board according to current requirements in anesthesiology	R	R		
11-11-2	Board certification or eligibility for certification is essential for anesthesiologists who take trauma call.	R	R		
11-12	Trauma centers participation in the trauma PIPS program by the anesthesia liaison is essential	R	R	R	
11-13	The anesthesiology liaison to the trauma program must attend at least 50 percent of the multidisciplinary peer	R	R	R	

	review meetings, with documentation by the trauma PIPS program				
11-14	An operating room must be adequately staffed and available within 15 minutes	R	R		
11-15	If the first operating room is occupied, an adequately staffed additional room must be available	R	R		
11-16	Availability of the operating room personnel and timeliness of starting operations must be continuously evaluated by the trauma PIPS process and measures must be implemented to ensure optimal care	R	R		
11-17	An operating room must be adequately staffed and available within 30 minutes			R	R
11-18	If an on-call team is used, the availability of operating room personnel and the timeliness of starting operations must be continuously evaluated by the trauma PIPS process, and measures must be implemented to ensure optimal care			R	R
11-19	All trauma centers must have rapid fluid infusers, thermal control equipment for patients and resuscitation fluids, intraoperative radiologic capabilities, equipment for fracture fixation, and equipment for bronchoscopy and gastrointestinal endoscopy	R	R	R	
11-20	Trauma centers that provide neurosurgical services must have the necessary equipment to perform a craniotomy.	R	R	R	R
11-21	Must have cardiothoracic surgery capabilities available 24 hours per day and should have cardiopulmonary bypass equipment	R			
11-22	If cardiopulmonary bypass equipment is not immediately available, a contingency plan, including immediate transfer to an appropriate center and 100 percent performance improvement review of all patients transferred, must be in place	R	R		
11-23	Must have an operating microscope available 24 hours per day	R			
11-24	A PACU with qualified nurses must be available 24 hours per day to provide care for the patient if needed during the recovery phase	R	R	R	R
11-25	If this availability requirement is met with a team on call from outside the hospital, the availability of the PACU nurses and compliance with this requirement must be documented by the PIPS program	R	R	R	R
11-26	The PACU must have the necessary equipment to monitor and resuscitate patients, consistent with the process of care designated by the institution	R	R	R	R
11-27	The PIPS program, at a minimum, must address the need for pulse oximetry, end-tidal carbon dioxide detection,	R	R	R	R

	arterial pressure monitoring, pulmonary artery catheterization, patient rewarming, and intracranial pressure monitoring				
11-28	There must be policies designed to ensure that trauma patients who may require resuscitation and monitoring are accompanied by appropriately trained providers during transportation to, and while in, the radiology department	R	R	R	R
11-29	Conventional radiography must be available 24 hours per day	R	R	R	R
11-30	Computed tomography (CT) must be available 24 hours per day	R	R	R	
11-31	An in-house radiology technologist and CT technologist are required	R	R		
11-32	Qualified radiologists must be available within 30 minutes in person or by teleradiology for the interpretation of radiographs	R	R	R	
11-33	Qualified radiologists must be available within 30 minutes to perform complex imaging studies, or interventional procedures	R	R		
11-34	Diagnostic information must be communicated in a written or electronic form and in a timely manner	R	R	R	R
11-35	Critical information deemed to immediately affect patient care must be verbally communicated to the trauma team in a timely manner	R	R	R	R
11-36	The final report must accurately reflect the chronology and content of communications with the trauma team, including changes between the preliminary and final interpretations	R	R	R	R
11-37	Changes in interpretation between preliminary and final reports, as well as missed injuries, must be monitored through the PIPS program	R	R	R	R
11-38	A radiologist must be appointed as liaison to the trauma program	R	R		
11-39	The radiologist liaison must attend at least 50 percent of peer review meetings and should educate and guide the entire trauma team in the appropriate use of radiologic services	R	R		
11-40	Participation in the trauma PIPS program process by the radiology liaison is essential	R	R		
11-41	At a minimum, radiologists must be involved in protocol development and trend analysis that relate to diagnostic imaging	R	R		
11-42	There must be a mechanism in place to view radiographic imaging from referring hospitals within their catchment area	R	R		

11-43	Board certification or eligibility for certification by an appropriate radiology board according to current requirements is essential for radiologists who take trauma call	R	R		
11-44	Interventional radiologic procedures and sonography must be available 24 hours per day	R	R		
11-45	Magnetic resonance imaging (MRI) capability must be available 24 hours per day	R	R		
11-46	The MRI technologist may respond from outside the hospital; however, the PIPS program must document and review arrival within 1 hour of being called. This time should meet current clinical guidelines	R	R		
11-47	If the CT technologist takes call from outside the hospital, the PIPS program must document the technologist's time of arrival at the hospital			R	
11-48	A surgically directed ICU physician team must be led by a surgeon boarded in surgical critical care, and critically ill trauma patients should be cared for in a designated ICU	R			
11-49-1	A surgeon with current board certification in surgical critical care must be designated as the ICU director	R			
11-49-2	The ICU team may be staffed by critical care physicians from different specialties but must remain surgically directed as noted above	R			
11-50	The ICU must be staffed with a dedicated ICU physician team led by the ICU director	R			
11-51	Appropriately trained physicians must be available in-house within 15 minutes to provide care for the ICU patients 24 hours per day	R			
11-52	If the trauma attending provides coverage, a backup ICU attending must be identified and readily available	R			
11-53	A surgeon must serve as co-director or director of the ICU and be actively involved in, and responsible for, setting policies and administrative decisions related to trauma ICU patients		R	R	
11-54	The ICU director or co-director should be currently board certified or eligibility for certification in surgical critical care in a Level II trauma center. In Level II and III facilities, the ICU director or co-director must be a surgeon who is currently board certified or eligible for certification by the current standard requirements		R	R	
11-55	Physician coverage of critically ill trauma patients must be available within 15 minutes 24 hours per day for interventions by a credentialed provider		R		
11-56	Physician coverage of the ICU must be available within 30 minutes, with a formal plan in place for emergency coverage			R	R

11-57	The PIPS program must review all ICU admissions and transfers of ICU patients to ensure that appropriate patients are being selected to remain at the Level III and Level IV center vs. being transferred to a higher level of care			R	R
11-58	The trauma surgeon must retain responsibility for the patient and coordinate all therapeutic decisions	R	R	R	R
11-59	Many of the daily care requirements can be collaboratively managed by a dedicated ICU team, but the trauma surgeon must be kept informed and concur with major therapeutic and management decisions made by the ICU team	R	R	R	R
11-60-1	The PIPS program must document that timely and appropriate ICU care and coverage are being provided	R	R	R	R
11-60-2	The timely response of credentialed providers to the ICU must be continuously monitored as part of the PIPS program	R	R	R	R
11-61	There must be a designated ICU liaison to the trauma service	R	R	R	
11-62	This [ICU] liaison must attend at least 50 percent of the multidisciplinary peer review meetings, with documentation by the trauma PIPS program	R	R	R	
11-63	The ICU liaison to the trauma program must accrue an average of 12 hours annually or 36 hours in 3 years of verifiable external trauma-related CME, or through an internal educational process based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-64	Other members of the ICU trauma team must be knowledgeable about, and current in, the care of injured patients. This requirement must be documented by the acquisition of 12 hours of trauma-related CME per year, on average, or through an internal educational process conducted by the trauma program and the ICU liaison based on the principles of practice-based learning and the PIPS program. Staying current with board MOC requirements is an acceptable method of demonstrating ongoing trauma-related education (CME)	R	R		
11-65	Qualified critical care nurses must be available 24 hours per day to provide care for patients during the ICU phase	R	R	R	R
11-66	The patient-to-nurse ratio in the ICU must not exceed two to one	R	R	R	R

11-67	The ICU must have the necessary equipment to monitor and resuscitate patients	R	R	R	R
11-68	Intracranial pressure monitoring equipment must be available in Level I and II trauma centers and in Level III and Level IV trauma centers with neurosurgical coverage that admit neurotrauma patients	R	R	R	R
11-69	Trauma patients must not be admitted or transferred by a primary care physician without the knowledge and consent of the trauma service, and the PIPS program should monitor adherence to this guideline			R	R
11-70	Facilities are prepared to manage the most complex trauma patients and must have available a full spectrum of surgical specialists, including specialists in orthopedic surgery, neurosurgery, cardiac surgery, thoracic surgery, vascular surgery, hand surgery, microvascular surgery, plastic surgery, obstetric and gynecologic surgery, ophthalmology, otolaryngology, and urology	R			
11-71	Must have the surgical specialists described (above) for Level I trauma centers and should provide cardiac surgery		R		
11-72-1	Must have the availability and commitment of orthopedic surgeons			R	
11-72-2	For all patients being transferred for specialty care, such as burn care, microvascular surgery, cardiopulmonary bypass capability, complex ophthalmologic surgery, or high-complexity pelvic fractures, agreements with a similar or higher-qualified verified trauma center should be in place. If this approach is used, a clear plan for expeditious critical care transport, follow-up, and performance monitoring is required. If complex cases are being transferred out, a contingency plan should be in place and must include the following: <ul style="list-style-type: none"> • A credentialing process to allow the trauma surgeon to provide initial evaluation and stabilization of the patient. • Transfer agreements with similar or higher-verified trauma centers. • Direct contact with the accepting facility to arrange for expeditious transfer or ongoing monitoring support. • Monitoring of the efficacy of the process by the PIPS programs. 	R	R	R	R
11-73	Medical specialists on staff must include specialists in cardiology, internal medicine, gastroenterology, infectious disease, pulmonary medicine, and nephrology and their respective support teams (for example,	R	R		

	respiratory therapy, a dialysis team, and nutrition support)				
11-74	Internal medicine specialists must be available on the medical staff			R	
11-75	A respiratory therapist must be available in the hospital 24 hours per day	R	R		
11-76	There must be a respiratory therapist on call 24 hours per day			R	
11-77	Acute hemodialysis must be available	R	R		
11-78	Trauma centers that do not have dialysis capabilities must have a transfer agreement in place			R	
11-79	Nutrition support services must be available	R	R		
11-80	Laboratory services must be available 24 hours per day for the standard analyses of blood, urine, and other body fluids, including microsampling when appropriate	R	R	R	R
11-81	The blood bank must be capable of blood typing and cross-matching	R	R	R	R
11-82	The blood bank must have an adequate in-house supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients	R	R		
11-83	The blood bank must have an adequate supply of packed red blood cells and fresh frozen plasma available within 15 minutes			R	R
11-84	Must have a massive transfusion protocol developed collaboratively between the trauma service and the blood bank	R	R	R	R
11-85	Coagulation studies, blood gas analysis, and microbiology studies must be available 24 hours per day	R	R	R	R
11-86	Advanced practitioners who participate in the initial evaluation of trauma patients must demonstrate current verification as an ATLS® provider	R	R	R	R
11-87-1	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners, as witnessed by an annual review by the TMD	R	R		
11-87-2	The trauma program must demonstrate appropriate orientation, credentialing processes, and skill maintenance for advanced practitioners.			R	R
REHABILITATION					
12-1	Rehabilitation services must be available within the hospital's physical facilities or as a freestanding rehabilitation hospital, in which case the hospital must have transfer agreements	R	R		
12-2	Rehabilitation consultation services, occupational therapy, speech therapy, physical therapy, and social services must be available	R	R		

12-3	Physical therapy must be provided	R	R	R	
12-4	Social services must be provided	R	R	R	
12-5	Occupational therapy must be provided	R	R		
12-6	Speech therapy must be provided	R	R		
12-7	The following services must be available during the acute phase of care, including intensive care: physical therapy, social services, occupational therapy and speech therapy	R	R		
GUIDELINES FOR THE OPERATION of BURN CENTERS					
14-1	Centers that refer burn patients to a designated burn center must have in place written transfer agreements with the referral burn center	R	R	R	R
TRAUMA REGISTRY					
15-1	Trauma registry data must be collected and analyzed	R	R	R	R
15-2	Data must be collected in compliance with the National Trauma Data Standard (NTDS) and submitted to the National Trauma Data Bank® (NTDB®) every year in a timely fashion so that they can be aggregated and analyzed at the national level	R	R	R	
15-3	The trauma registry is essential to PIPS program and must be used to support the PIPS process	R	R	R	R
15-4	Findings must be used to identify injury prevention priorities that are appropriate for local implementation	R	R	R	R
15-5	Trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
15-6	Trauma registries should be concurrent. At a minimum, 80 percent of cases must be entered within 60 days of discharge	R	R	R	R
15-7	The Trauma Registrar must attend or have previously attended two courses within 12 months of being hired: (1) the American Trauma Society's Trauma Registrar Course or equivalent provided by a state trauma program; and (2) the Association of the Advancement of Automotive Medicine's Injury Scaling Course or an equivalent local course.	R	R	R	R
15-8	The trauma program must ensure that appropriate measures are in place to meet the confidentiality requirements of the data	R	R	R	R
15-9-1	One full-time equivalent employee dedicated to the registry must be available to process the data capturing the NTDS data set for every 500 admitted trauma patients annually	R	R		
15-9-2	A proportionate FTE must be employed for hospitals with less than 500 admitted trauma patients annually			R	R
15-10	Strategies for monitoring data validity are essential	R	R	R	R
PERFORMANCE IMPROVEMENT AND PATIENT SAFETY (PIPS)					

16-1-1	Trauma centers must have a PIPS program that includes a comprehensive written plan outlining the configuration and identifying both adequate personnel to implement that plan and an operational data management system	R	R	R	
16-1-2	The PIPS program must be supported by the collection and analysis of trauma registry data to identify opportunities for improvement	R	R	R	R
16-1-3	The processes of event identification and levels of review must result in the development of corrective action plans, and methods of monitoring, reevaluation, and benchmarking must be present	R	R	R	R
16-2-1	Problem resolution, outcome improvements, and assurance of safety (“loop closure”) must be readily identifiable through methods of monitoring, reevaluation, benchmarking, and documentation	R	R	R	
16-2-2	Peer review must occur at regular intervals to ensure that the volume of cases is reviewed in a timely fashion.	R	R	R	R
16-3-1	The trauma PIPS program must integrate with the hospital quality and patient safety effort and have a clearly defined reporting structure and method for provision of feedback	R	R	R	
16-3-2	The trauma PIPS program is endorsed by the hospital governing body and is empowered to address events that involve multiple disciplines.	R	R	R	R
16-3-3	There must be documented, adequate administrative support to ensure evaluation of all aspects of trauma care	R	R	R	R
16-3-4	The TMD and TPM must have the authority and be empowered by the hospital governing body to lead the program	R	R	R	R
16-3-5	The TMD must have sufficient authority to set the qualifications for the trauma service members, including individuals in specialties that are routinely involved with the care of the trauma patient	R	R	R	
16-3-6	The TMD must have authority to recommend changes for the trauma panel based on performance review	R	R	R	
16-3-7	The peer review committee must be chaired by the TMD	R	R	R	
16-3-8	Representatives from general surgery, emergency medicine, orthopedics, and anesthesiology, critical care—and for Level I and II centers, neurosurgery, and radiology—actively participate in the trauma PIPS program and attend at least 50 percent of the multidisciplinary trauma peer review committee meetings	R	R	R	
16-3-9	Any emergent neurosurgical cases must also have the participation of neurosurgery on the multidisciplinary trauma peer review committee			R	

16-3-10	The TMD, TPM, and liaisons in emergency medicine, orthopedics, and neurosurgery must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related education (CME or CE, as appropriate to the discipline), if not board eligible or board certified.	R	R		
16-3-11	The liaison in critical care must obtain 12 hours annually or 36 hours in 3 years of verifiable, external, trauma-related CME or through an internal educational process based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.	R	R		
16-3-12	The trauma center must demonstrate that all trauma patients can be identified for review	R	R	R	R
16-3-13	The trauma registry must submit the required data elements to the NTDB	R	R	R	
16-3-14	The trauma PIPS program must be supported by a registry and a reliable method of concurrent data collection that consistently obtains information necessary to identify opportunities for improvement	R	R	R	R
16-3-15	All trauma centers must use a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-4	A trauma program must use clinical practice guidelines, protocols, and algorithms derived from evidenced-based validated resources in order to achieve the goal of using a risk adjusted benchmarking system to measure performance and outcomes	R	R	R	
16-5	All process and outcome measures must be documented within the trauma PIPS program's written plan and reviewed and updated at least annually	R	R	R	R
16-6-1	All trauma-related mortalities must be systematically reviewed and those mortalities with opportunities for improvement identified for peer review. 1. Total trauma-related mortality rates. Outcome measures for total, pediatric (younger than 15 years), and geriatric (older than 64 years) trauma encounters should be categorized as follows: a) DOA (pronounced dead on arrival with no additional resuscitation efforts initiated in the emergency department); b. DIED (died in the emergency department despite resuscitation efforts); c. In-hospital (including operating room). 2. Mortality rates by Injury Severity Scale (ISS) subgroups	R	R	R	
16-6-2	Trauma surgeon response to the emergency department for highest level of activation must be monitored, documented and reviewed	R	R	R	R

16-6-3	Criteria for all levels of trauma team activation (TTA) must be defined and reviewed annually	R	R	R	R
16-6-4	All TTAs must be categorized by the level of response and quantified by number and percentage	R	R	R	R
16-6-5	Trauma surgeon response time to other levels of TTA, and for back-up call response, should be monitored, documented and reviewed	R	R	R	
16-6-6	Response parameters for consultants addressing time-critical injuries (for example, epidural hematoma, open fractures, and hemodynamically unstable pelvic fractures) must be determined and monitored	R	R	R	
16-7-1	Rates of undertriage and overtriage must be monitored and reviewed quarterly	R	R	R	
16-7-2	Trauma centers admitting at least 100 pediatric trauma patients (≤ 14 years) annually require a pediatric-specific trauma PIPS program. Trauma centers admitting less than 100 pediatric trauma patients annually must review each case for timeliness and appropriateness of care	R	R		
16-7-3	All trauma patients who are diverted or transferred during the acute phase of hospitalization to another trauma center, acute care hospital, or specialty hospital (for example, burn center, reimplantation center, or pediatric trauma center) or patients requiring cardiopulmonary bypass or when specialty personnel are unavailable must be subjected to individual case review to determine the rationale for transfer, appropriateness of care, and opportunities for improvement. Follow-up from the center to which the patient was transferred should be obtained as part of the case review.	R	R	R	R
16-7-4	Instances in which the emergency department is left uncovered must be reviewed for timeliness of Emergency physician's response and appropriateness of care			R	
16-7-5	Trauma center diversion-bypass hours must be routinely monitored, documented, and reported, including the reason for initiating the diversion policy, and must not exceed 5 percent.	R	R	R	
16-7-6	All cases with neurologic injury must be monitored, and any case not transferred to higher level of care is subject to case review for timeliness of response and appropriateness of care			R	
16-7-7	<ul style="list-style-type: none"> • In-house anesthesia service (emergency department, intensive care unit, floor, and postanesthesia care unit) must be available for the care of trauma patients • Operating room delays involving trauma patients because of lack of anesthesia support services must be identified and reviewed to determine the reason for 	R	R	R	

	delay, adverse outcomes, and opportunities for improvement.				
16-7-8	Delay in operating room availability must be routinely monitored. Any case that is associated with a significant delay or adverse outcome must be reviewed for reasons for delay and opportunities for improvement.	R	R	R	
16-7-9	Response times of operating room and postanesthesia care unit personnel when responding from outside the trauma center must be routinely monitored.	R	R	R	
16-7-10	Rate of change in interpretation of radiologic studies should be categorized by RADPEER or similar criteria (describe process/scoring metric used).	R	R	R	
16-7-11	Response times of computed tomography technologist (30 minutes)/magnetic resonance imaging (60 minutes) technologist/interventional radiology team (30 minutes) when responding from outside the trauma center	R	R	R	
16-8	Transfers to a higher level of care within the institution	R	R	R	R
16-9-1	Solid organ donation rate	R	R	R	
16-9-2	The percentage of completed registry records within two months of discharge should be determined.	R	R	R	R
16-9-3	Multidisciplinary trauma peer review committee attendance	R	R	R	
16-9-4	Must admit at least 1,200 trauma patients yearly or have 240 admissions with an ISS of more than 15	R			
16-10	Sufficient mechanisms must be available to identify events for review by the trauma PIPS program	R	R	R	R
16-11	Once an event is identified, the trauma PIPS program must be able to verify and validate that event	R	R	R	R
16-12	There must be a process to address trauma program operational events	R	R	R	
16-13	Documentation (minutes) reflects the review of operational events and, when appropriate, the analysis and proposed corrective actions	R	R	R	
16-14-1	Mortality data, adverse events and problem trends, and selected cases involving multiple specialties must undergo multidisciplinary trauma peer review	R	R	R	
16-14-2	This effort may be accomplished in a variety of formats but must involve the participation and leadership of the TMD; the group of general surgeons on the call panel; and the liaisons from emergency medicine, orthopedics, neurosurgery, anesthesia, critical care, and radiology	R	R	R	
16-15	Each member of the committee must attend at least 50 percent of all multidisciplinary trauma peer review committee meetings	R	R	R	
16-16	When general surgeons cannot attend the multidisciplinary trauma peer review meeting, the TMD	R	R	R	

	must ensure that they receive and acknowledge the receipt of critical information generated at the multidisciplinary peer review meeting to close the loop				
16-17	The multidisciplinary trauma peer review committee must systematically review mortalities, significant complications, and process variances associated with unanticipated outcomes and determine opportunities for improvement	R	R	R	
16-18	When an opportunity for improvement is identified, appropriate corrective actions to mitigate or prevent similar future adverse events must be developed, implemented, and clearly documented by the trauma PIPS program	R	R	R	
16-19	An effective performance improvement program demonstrates through clear documentation that identified opportunities for improvement lead to specific interventions that result in an alteration in conditions such that similar adverse events are less likely to occur	R	R	R	
OUTREACH AND EDUCATION					
17-1	Engage in public and professional education	R	R	R	R
17-2	Trauma centers must provide some means of referral and access to trauma center resources	R	R		
17-3	Must have continuous rotations in trauma surgery for senior residents (Clinical PGY 4–5) that are part of an Accreditation Council for Graduate Medical Education–accredited program. For pediatric Level I centers, the continuous rotation for surgical residents is extended to include clinical PGY 3	R			
17-4-1	The hospital must provide a mechanism to offer trauma-related education to nurses involved in trauma care	R	R	R	
17-4-2	Resuscitation nurses must take initial 16 hour accredited course in the care of trauma patients followed by recertification or 4 hours/year of trauma-related continuing education	R	R	R	R
17-4-3	The successful completion of ATLS® course, at least once, is required for all general surgeons, emergency physicians and midlevel providers on the trauma team	R	R	R	R
17-4-4	The TD and the liaison representative from neurosurgery, orthopedic surgery, and emergency medicine must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, if not board eligible or board certified.	R	R		
17-4-5	The liaison representative from critical care must accrue an average of 12 hours annually, or 36 hours in 3 years, of external trauma-related CME, or through an internal educational process conducted by the trauma program	R	R		

	based on the principles of practice-based learning and the PIPS program, if not board eligible or board certified.				
17-4-6	Other members of the general surgery, neurosurgery, orthopedic surgery, emergency medicine and critical care specialties who take trauma call must also be knowledgeable and current in the care of injured patients.	R	R		
PREVENTION					
18-1	Trauma centers must have an organized and effective approach to injury prevention and must prioritize those efforts based on local trauma registry and epidemiologic data	R	R	R	R
18-2-1	Each trauma center must have someone in a leadership position that has injury prevention as part of his or her job description	R	R	R	R
18-2-2	This individual must be a prevention coordinator (separate from the TPM) with a job description and salary support	R			
18-3	Universal screening for alcohol use must be performed for all injured patients and must be documented	R	R	R	R
18-4	All patients who have screened positive must receive an intervention by appropriately trained staff, and this intervention must be documented	R	R		
18-5	At least two programs that address one of the major causes of injury in the community must be implemented	R	R		
18-6	A trauma center's prevention program must include and track partnerships with other community organizations	R	R		
TRAUMA RESEARCH AND SCHOLARSHIP					
19-1	A program must have 20 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period at a minimum	R			
19-2	These publications must result from work related to the trauma center or the trauma system in which the trauma center participates	R			
19-3	Of the 20 articles, at least one must be authored or co-authored by members of the general surgery trauma team	R			
19-4-1	Additionally, at least one article each from three of the following disciplines is required: basic sciences, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing	R			
19-4-2	A pediatric Level I center's research requirement is equivalent to that of adult Level 1 trauma centers	R			

19-4-3	In combined Level I adult and Level I pediatric centers, half of the research requirement must be pediatric research	R			
19-7	<p>In the alternate method, a Level I program must have the following: a) A program must have 10 peer-reviewed articles published in journals included in Index Medicus or PubMed in a 3-year period. These articles must result from work related to the trauma center or the trauma system in which the trauma center participates. Of the 10 articles, at least one must be authored or co-authored by members of the general surgery trauma team, and at least one article each from three of the following disciplines is required: basic sciences as related to injury, neurosurgery, emergency medicine, orthopedics, radiology, anesthesia, vascular surgery, plastics/ maxillofacial surgery, critical care, cardiothoracic surgery, rehabilitation, and nursing. Trauma-related articles authored by members of other disciplines or work done in collaboration with other trauma centers and participation in multicenter investigations may be included in the remainder.</p> <p>b) Of the following seven trauma-related scholarly activities, four must be demonstrated: • Evidence of leadership in major trauma organizations, which includes membership in trauma committees of any of the regional or national trauma organizations. • Demonstrated peer-reviewed funding for trauma research from a recognized government or private agency or organization. • Evidence of dissemination of knowledge that includes review articles, book chapters, technical documents, Web-based publications, videos, editorial comments, training manuals, and trauma-related educational materials or multicenter protocol development. • Display of scholarly application of knowledge as evidenced by case reports or reports of clinical series in journals included in MEDLINE. • Participation as a visiting professor or invited lecturer at national or regional trauma conferences. • Support of resident participation in mentoring scholarly activity, including laboratory experiences; clinical trials; resident trauma paper competitions at the state, regional, or national level; and other resident trauma presentations. • Mentorship of fellows, as evidenced by the development or maintenance of a recognized trauma, critical care, or acute care surgery fellowship</p>	R			
19-8	The administration must demonstrate support for the research program by, for example, providing basic laboratory space, sophisticated research equipment, advanced information systems, biostatistical support,	R			

	salary support for basic and translational scientists, or seed grants for less experienced faculty				
DISASTER PLANNING AND MANAGEMENT					
20-1	Trauma centers must meet the disaster-related requirements of OAR 333-515-0030	R	R	R	R
20-2	A surgeon or delegate from the trauma panel must be a member of the hospital's disaster committee	R	R	R	
20-3	Hospital drills that test the individual hospital's disaster plan must be conducted at least twice a year, including actual plan activations that can substitute for drills	R	R	R	R
20-4	All trauma centers must have a hospital disaster plan described in the hospital's policy and procedure manual or equivalent	R	R	R	R
SOLID ORGAN PROCUREMENT ACTIVITIES					
21-1	The trauma center must have an established relationship with a recognized OPO	R	R	R	
21-2-1	A written policy must be in place for triggering notification of the regional OPO	R	R	R	
21-2-2	Must review its solid organ donation rate annually	R	R	R	
21-3	Written protocols defining the clinical criteria and confirmatory tests for the diagnosis of brain death are required	R	R	R	R

EXHIBIT 5

OAR Chapter 333, Division 200

OREGON CRITERIA for CONSIDERATION of TRANSFER to a LEVEL I or II TRAUMA CENTER

HEAD AND CENTRAL NERVOUS SYSTEM

- Penetrating injuries or open fracture of the skull
- GCS < 14 or lateralizing neurologic signs (if no neurosurgical consultation is available.)
- Spinal fracture or spinal cord deficit
- Carotid or vertebral arterial injury

CHEST

- More than two unilateral rib fractures or bilateral rib fractures with pulmonary contusion (if no critical care consultation is available)
- Torn thoracic aorta or great vessel
- Cardiac injury or rupture
- Bilateral pulmonary contusion with Pao₂:Flo₂ ratio less than 200 (require protracted ventilation)

ABDOMEN AND PELVIS

- Major abdominal vascular injury
- Grade IV or V liver injuries requiring transfusion
- Unstable pelvic fracture requiring transfusion
- Complex pelvis/acetabulum fractures
- Open pelvic injury

MULTIPLE SYSTEM INJURY

- Significant head injury combined with significant face, chest, abdominal, or pelvic injury
- Significant torso injury with advanced comorbid disease (such as coronary artery disease, chronic obstructive pulmonary disease, type 1 diabetes mellitus, or immunosuppression)
- Burns with associated injuries
- Fracture or dislocation with loss of distal pulses

SECONDARY DETERIORATION (LATE SEQUELAE)

- Patients requiring long term ventilation
- Sepsis
- Single or multiple organ system failure (deterioration in CNS, cardiac, pulmonary, hepatic, renal or coagulation systems)
- Major tissue necrosis