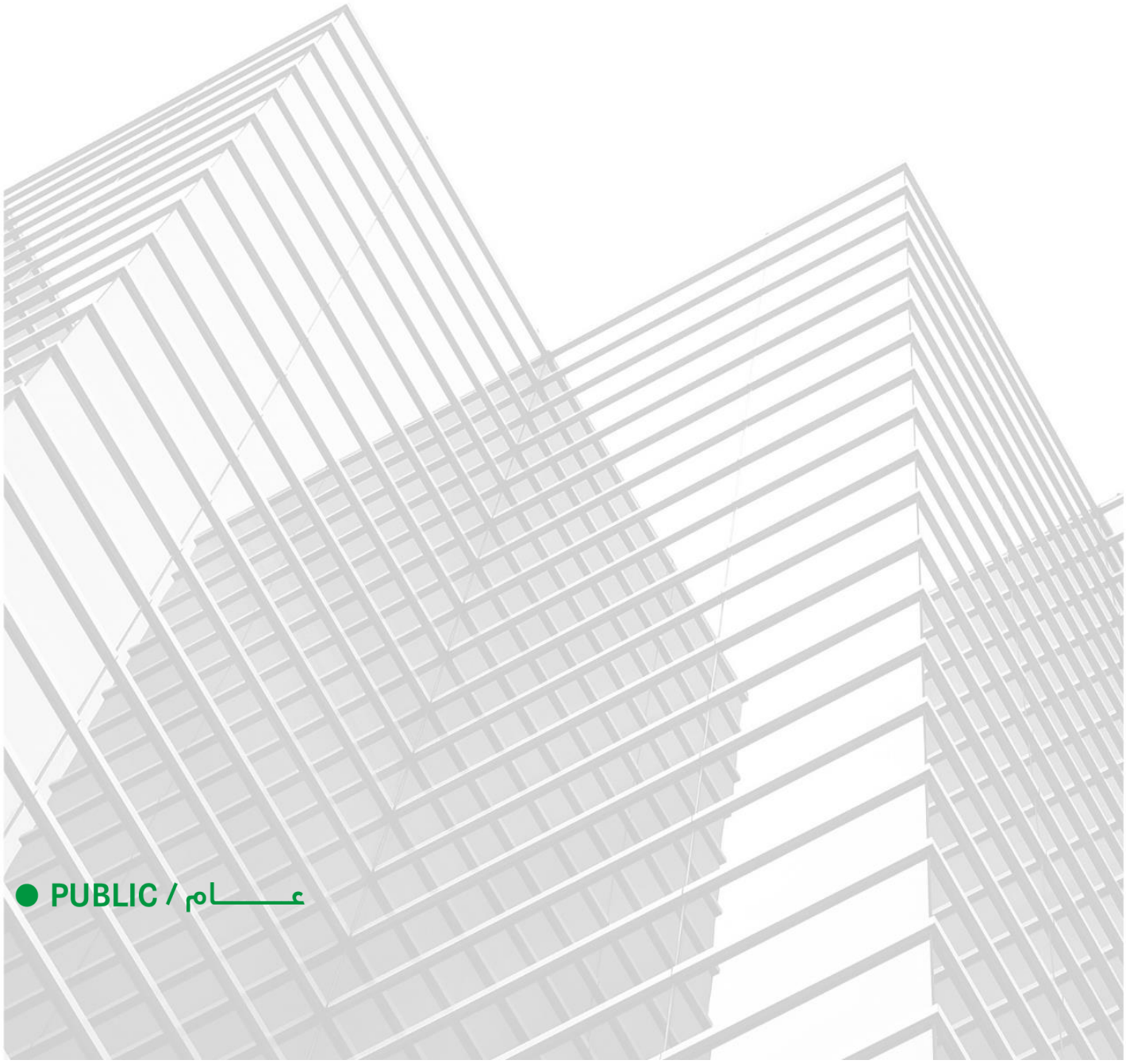
دائـــرة الـصـحـــة
DEPARTMENT OF HEALTH

Standard for Trauma Center Level – I



PUBLIC / عـــــام

Document Title:	Standard for Trauma Center Level – I		
Document Ref. Number:	DOH/STD/CEPAR/ Trauma C L1/V1	Version:	V1
New / Revised:	New		
Publication Date:	Dec, 2023		
Effective Date:	Dec, 2023		
Document Control:	DoH Strategy Sector		
Applies To:	- DoH licensed Healthcare Providers. - DoH authorized Health Payers. - All Health Insurance products and schemes, as applicable.		
Owner:	- Center of Emergency Preparedness and Response - Healthcare Facilities		
Revision Date:	Dec, 2024		
Revision Period:	One Year		
Contact:	Center of Emergency Preparedness and Response - CEPAR (CEPAR@doh.gov.ae), (MDOCEPAR@doh.gov.ae)		

1. Standard Scope

This Standard defines the eligibility criteria and sets out the service specifications and minimum requirements for a single medical center to be designated as a Level I Trauma Center in the Emirate of Abu Dhabi. This Standard is aligned with international standards for Level I Trauma Centers and is guided by scientific evidence based best practices. Objective, extramural verification of a hospital's resources, commitment, and capability is important in the development of a regional trauma system. This Standard will serve in the preparation process and may be applied to any hospital with surgical capabilities, an accredited emergency department, or as mandated by the Department of Health.

2. Definitions and Abbreviations

No.	Term / Abbreviation	Definition
2.1	DoH (Department of Health)	Department of Health - Abu Dhabi is the regulative body of the Healthcare Sector in the Emirate of Abu Dhabi and ensures excellence in healthcare for the community by monitoring the health status of the population.
2.2	CEPAR (Center of Emergency Preparedness and Response)	CEPAR maintains independent authority over healthcare emergencies, and shares authority with the appropriate DOH sectors including Healthcare Facilities, Workforce, Payers, and Legal. It is the combination of all of these authorities that delineate the medical direction system. The regulatory authorities reside with CEPAR and each of the sectors and shall be enforced through them.
2.3	UMOC (Unified Medical Operations Center)	Development of a UMOC that will include tracking of patient transport, activation, monitoring, and facilitation of SPPs, hosting Poison Control Center activities, and serving as the incident management center for DOH Emergency Management.
2.4	MDS (Medical Direction System)	A system of physician-directed leadership, quality assurance, administrative and medical oversight that provides professional and public accountability for medical care provided in the pre-hospital setting.
2.5	HLO's (Health Liaison Officers)	Health liaison officers (HLO) are persons selected to ensure information flows between the emergency operations centers or coordination center at a local, district or state level, on Health agency operational capabilities and issues as they arise.
2.6	On-line (Concurrent) Medical Direction	Direction provided directly to out-of-hospital providers by the medical director or designee, generally in an emergency, either on-scene or by direct voice communication by radio, telephone, or other means as technology develops, and including person-to-person communication of patient status, and orders to be carried out
2.7	Off-line (Prospective and Retrospective) Medical Direction	Direction including the administrative promulgation and enforcement of accepted standards for out-of-hospital care accomplished through both prospective (e.g., training, testing and certification of providers, protocol development, operational policy and procedures development, and legislative activities), and retrospective methods (e.g., medical audit and review of care/ process improvement, direction of remedial education, and limitation of patient care functions)
2.8	EMS (Emergency Medical Services)	Regulatory authority over all medical and clinical aspects of pre-hospital Emergency Medical Services (EMS). This will include Medical Direction and may include ambulance call center management and ambulance dispatch. It will include oversight of all interfacility transfers, oversight of medical/ clinical components and programs for healthcare provided in patient transport systems.
2.9	PHCS (Pre-Hospital Care System)	Medical strategic stock for pre-hospital medical services to deal with emergencies, crises and disasters. Integrated Continuum of Pre-hospital and Emergency Department Care.
2.10	SPP (Special Program Pathways)	Regulatory oversight of time-critical healthcare emergencies and "Special Program Pathways (SPP)". Authorities must be clarified across DOH sectors to avoid duplication and conflict of regulatory oversight, ensure close coordination and collaboration with internal (DOH) and external

		stakeholders, and direct integration and monitoring of all care components in the pathways.
2.11	PQR (Professional Qualification Requirement)	The PQR provides a base for the Authorities to assess credentials and relative documents submitted by applicants, in accordance to the UAE federal laws and benchmarked with international best practices.

3. Standard Requirements and Specifications

3.1. Administrative Standards

3.1.1. There shall be demonstrated commitment to trauma care by the hospital's board of directors, administration, medical staff, and nursing staff to treat any trauma patient who presents to the facility for care. Methods of demonstrating commitment to the trauma center and system by the hospital shall include, but not be limited to, the following:

3.1.1.1. An administrative resolution of commitment of hospital financial, human, and physical resources to treat all trauma patients at the level of hospital's approval, regardless of race, sex, nationality, place of residence, or insurance status.

3.1.1.2. An administrative resolution committing to participate in the regional trauma system.

3.1.1.3. Development of a trauma budget that provides sufficient support to the trauma service and program within the hospital.

3.1.1.4. Institution of procedures to document and review all transfers both to and from the facility.

3.1.1.5. Establishment of policies and procedures to ensure the maintenance of the services essential to a trauma center and system as outlined in this standards document.

3.1.1.6. Routine and regular submission of patient data to the Department of Health trauma registry, and submission of additional patient care information as requested by the Department of Health or its agent.

3.1.1.7. Establishment of formal written patient transfer agreements with neighboring hospitals and trauma centers.

3.1.1.8. Implementation of an injury prevention program to address the hospital and locale-specific causes of injury and death.

3.1.1.9. The hospital Chief Executive Officer (CEO) has overall responsibility to comply with all trauma center standards. The CEO or their designer shall ensure that all staff involved with the care of the trauma patient are aware of their responsibilities as required by the trauma center standards.

3.1.2. The hospital shall ensure that the Trauma Medical Director (TMD) is responsible and accountable for administering all aspects of trauma care. In all trauma centers the TMD must be responsible for, and have the authority to:

3.1.2.1. Develop and enforce policies and procedures relevant to the care of the injured patient.

3.1.2.2. Ensure providers meet all requirements and adhere to institutional standards of practice.

3.1.2.3. Work across departments and/or other administrative units to address deficiencies in care.

3.1.2.4. Determine (with their liaisons) provider participation in trauma care, which should be guided by findings from the Performance Improvement and Patient Safety (PIPS) process, an Ongoing Professional Practice Evaluation (OPPE), or similar evaluation process.

3.1.2.5. Oversee the structure and process of the trauma PIPS.

3.1.2.6. Enforce trauma center standards across all departments within the hospital. The Trauma Program Manager (TPM) shall function under the direction of the Trauma Medical Director and interact with all departments on behalf of the Trauma Medical Director.

3.1.2.7. Delegate authority to perform administrative functions to another trauma surgeon when the Trauma Medical Director is unavailable.

3.1.2.8. Credentialing and attesting to the medical ability of all personnel who provide trauma services. Appointment or removal of personnel from the trauma service shall be done by the Trauma Medical Director pursuant to procedures, policies, or bylaws of the hospital.

3.1.2.9. When there are issues that the Trauma Medical Director has been unable to resolve through the hospital's organizational structure, the hospital shall provide a specific mechanism to ensure that the medical staff or CEO address such unresolved issues. This mechanism shall include direct consultation with the affected services, including, but not limited to, trauma and emergency services.

3.1.2.10. The hospital shall ensure that the procedures, policies, or bylaws address circumstances in which the Trauma Medical Director determines that a physician's actions compromise the health, safety, or welfare of trauma patients. In such cases, procedures, policies, or bylaws shall address options such as temporary or permanent removal of the physician from the trauma service, or other appropriate remedial measure.

3.1.2.11. A Level I adult trauma center must care for at least 1,200 trauma patients per year or at least 240

trauma patients with an Injury Severity Score (ISS) greater than 15 per year.

3.1.3. Adult trauma centers that care for 100 or more injured children under 15 years of age must have the following.
- 3.1.3.1. Pediatric emergency department area
- 3.1.3.2. Pediatric intensive care area
- 3.1.3.3. Appropriate resuscitation equipment, as outlined in the pediatric readiness toolkit.
- 3.1.3.4. In all trauma centers each emergency department must perform a pediatric readiness assessment during the verification cycle and have a plan to address identified gaps.
- 3.1.3.5. Regional trauma system integration

3.1.4. All trauma centers must participate in the regional trauma system. Examples of participation include the following:
- 3.1.4.1. Participation in regional trauma advisory committees
- 3.1.4.2. Leadership in regional medical audit committees
- 3.1.4.3. Collaboration with regional trauma advisory committees, EMS, or other agencies to promote the development of regional systems.
- 3.1.4.4. Participation in media and legislative education to promote and develop trauma systems.
- 3.1.4.5. Participation in regional trauma needs assessment or injury surveillance.
- 3.1.4.6. Participation in the development of regional trauma plans or regional trauma registries.
- 3.1.4.7. Provision of technical assistance and education to hospitals and their providers within the region to improve system performance.

3.2. Trauma Service Standards:

3.2.1. Organizational requirements: the trauma service will be a dedicated and defined service within the organizational structure of the hospital as evidenced by the following:
- 3.2.1.1. Trauma Medical Director (TMD): a dedicated TMD who directs and oversees the operation of the trauma service. The director position for the trauma service shall be compensated by the hospital and documented by a written job description and organizational chart.
- 3.2.1.2. All trauma centers must demonstrate that the TMD is allocated sufficient time to fulfil the requirements of the role.

3.2.2. Trauma Program Manager (TPM): a full-time Trauma Program Manager TPM with a job description and organizational chart demonstrating the TPM reports to the TMD. All trauma centers must have a TPM that fulfils the following requirements:
- 3.2.2.1. Have 1.0 full-time equivalent (FTE) commitment to the trauma program for Level I centers.
- 3.2.2.2. Have completed the American Trauma Society's Trauma Program Management Course (or equivalent) and the Society of Trauma Nurses' Trauma Outcomes Performance Improvement Course (TOPIC) or equivalent.
- 3.2.2.3. Provide evidence of 36 hours of trauma-related continuing education (CE) during a 3-year cycle.
- 3.2.2.4. Hold current membership in a national or regional trauma organization.
- 3.2.2.5. If a TPM is responsible for trauma registry data entry, they must also comply with the registrar-related requirements in addition to the TPM requirements.
- 3.2.2.6. In combined programs that are Level II adult and Level II pediatric trauma centers, it is acceptable for the pediatric TPM of a Level II pediatric trauma center to serve at least 0.5 FTE as the pediatric TPM. The remaining time must be devoted to other roles within the adult or pediatric trauma program.
- 3.2.2.7. Trauma Registrar: All trauma centers must have at least 0.5 FTE trauma registrars dedicated to the trauma registry per 200-300 annual admissions.

3.2.3. Trauma Registrar Requirements:
- 3.2.3.1. In all trauma centers, all staff members who have a registry role in data abstraction and entry, injury coding, Injury Severity Score (ISS) calculation, data reporting, or data validation for the trauma registry must fulfil all of the following requirements.
- 3.2.3.2. Participate in and pass the most recent version of the Association for the Advancement of Automotive Medicine's (AAAM) Abbreviated Injury Scale (AIS) course.

3.2.4. Participate in a trauma registry course that includes all the following content:
- 3.2.4.1. Abstraction
- 3.2.4.2. Data management
- 3.2.4.3. Reports/report analysis
- 3.2.4.4. Data validation
- 3.2.4.5. Patient privacy
- 3.2.4.6. Participate in an ICD-10 course or an ICD-10 refresher course every five years.
- 3.2.4.7. Accrue at least 24 hours of trauma-specific continuing education over each three-year cycle.
- 3.2.4.8. In all trauma centers, at least one registrar must be a current Certified Abbreviated Injury Scale Specialist (CAISS)

3.3. Administrative Requirements:

3.3.1. The Trauma Medical Director is responsible to:
- 3.3.1.1. Develop and enforce policies and procedures relevant to care of the injured patient.
- 3.3.1.2. Ensure providers and nurses meet all requirements (i.e., CE, required certifications, etc.) and adhere

to institutional and Department of Health (DOH) standards of practice.

3.3.1.3. Work across departments and/or other administrative units to address deficiencies in care.

3.3.1.4. Determine (with their liaisons) provider and nursing participation in trauma care, which might be guided by findings from the PIPS process or an Ongoing Professional Practice Evaluation

3.3.1.5. Oversee the structure and process of the trauma PIPS program and chair the Multidisciplinary PIPS Committee 3.3.1.6. An associate TMD may chair the Multidisciplinary PIPS Committee at the discretion of the TMD.

3.3.1.7. Ensure institutional integration in regional trauma committee activities. Institutional participation requires attendance at no less than 75% of scheduled regional trauma committee activities.

3.3.1.8. Ensure there is a written plan available that describes the hospital's interactions with other hospitals, EMS agencies, and other relevant agencies during a disaster and/or mass casualty situation.

3.3.1.9. Ensure the hospital submits trauma registry data in a timely fashion.

3.3.1.10. Key Performance Indicator (KPI): 80% of charts completed within 60 days of discharge.

3.3.1.11. The trauma center provides, within the facility, pediatric trauma patient care services, from emergency department admission through rehabilitation, that are separate and distinct from adult trauma patient care services.

3.3.1.12. Medical and patient care requirements: The Trauma Medical Director will maintain oversight responsibility for the development, implementation, and ongoing compliance of hospital policies and clinical protocols for trauma care.

3.3.2. The Trauma Medical Director will ensure that patient care protocols exist for a minimum of the following departments:

3.3.2.1. Resuscitation area of the emergency department

3.3.2.2. Intensive care units

3.3.2.3. Operating theaters and post-anesthesia recovery unit

3.3.2.4. Medical-surgical units

3.3.3. The Trauma Medical Director will ensure that policies and protocols are developed for a minimum of the following:

3.3.3.1. Tiered activation criteria.

3.3.3.2. The highest tier activation must include at least the following criteria.

3.3.3.2. Confirmed blood pressure less than 90 mm Hg at any time in adults and age-specific hypotension in children.

3.3.3.3. Gunshot wounds to the neck, chest, or abdomen.

3.3.3.4. GCS less than 9 (with mechanism attributed to trauma).

3.3.3.5. Transfer patients from another hospital who require ongoing blood transfusion.

3.3.3.6. Patients intubated in the field and directly transported to the trauma center.

3.3.3.7. Patients who have respiratory compromise or need an emergency airway.

3.3.3.8. Transfer patients from another hospital with ongoing respiratory compromise (excludes patients intubated at another facility who are now stable from a respiratory standpoint).

3.3.3.9. Emergency physician's discretion.

3.3.3.10. KPI: For the highest level of activation, at least 80 percent of the time, the consultant trauma surgeon on call must be at the patient's bedside within 15 minutes of patient arrival.

3.3.3.11. KPI: Trauma programs must define and meet acceptable response time to activations other than the highest level.

3.3.3.12. Patient transfers into and out of the hospital.

3.3.3.13. Identification of vulnerable geriatric patients.

3.3.3.14. Identification of patients who will benefit from the input of a health care provider with geriatric expertise.

3.3.3.15. Prevention, identification, and management of dementia, depression, and delirium.

3.3.3.16. Process to capture and document what matters to patients, including preferences and goals of care, code status, advanced directives, and identification of a proxy decision maker.

3.3.3.17. Medication reconciliation and avoidance of inappropriate medications.

3.3.3.18. Screening for mobility limitations and assurance of early, frequent, and safe mobility.

3.3.3.19. Implementation of safe transitions to home or other health care facilities.

3.3.3.20. The Trauma Medical Director will approve all trauma-related patient care protocols before implementation.

3.3.3.21. The Trauma Medical Director, in coordination with the Trauma Program Manager, shall monitor compliance with trauma-related protocols through the Performance Improvement and Patient Safety (PIPS) process.

3.3.4. Qualifications for trauma administrative staff: the trauma service shall have evidence on file that describes the qualifications of the Trauma Medical Director and the Trauma Program Manager to provide medical and organizational leadership to the trauma service. Programs must meet, at a minimum, the following requirements:

3.3.4.1. Trauma Medical Director

3.3.4.2. Board certification in general surgery
3.3.4.3. Board certification in trauma surgery and/or surgical critical care
3.3.4.4. Unrestricted Tier 1 consultant medical license
3.3.4.5. Unrestricted privileges to provide emergency general surgery and trauma care to injured patients.
3.3.4.6. Participates on the trauma call rota
3.3.4.7. Serves as TMD for a single trauma program.
3.3.4.8. Documentation that the medical director manages a minimum of 28 trauma cases per year (average of seven per quarter), at least 8 of which are pediatric (if the medical director manages pediatric patients). These cases may include operative and non-operative interventions.
3.3.4.9. Documentation of 36 hours of trauma-related continuing medical education (CME) during a three-year cycle (or average of 12 hours annually).
3.3.4.10. Current ATLS certification
3.3.4.11. Hold active membership in at least one national or international trauma organization and have attended at least one meeting during the verification cycle.
3.3.4.12. The DOH, with the advice of the Abu Dhabi Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.4. Trauma Program Manager:

3.4.1. Documentation of a valid DOH nursing license
3.4.2. Documentation of completion of the American Trauma Society's Trauma Program Management Course or equivalent, the Society of Trauma Nurses' Trauma Outcomes Performance Improvement Course (TOPIC) or equivalent, and the Trauma Nursing Core Course (TNCC) or equivalent.
3.4.3. Provide evidence of 36 hours of trauma-related continuing education (CE) during the verification cycle (or average of 12 hours annually).
3.4.4. Hold current membership in a regional, national, or international trauma organization 1.1.2.4.2.5. Maintain oversight over the trauma program.
3.4.5. Assist with the budgetary process for the trauma program.
3.4.6. Develop and implement clinical protocols and practice management guidelines.
3.4.7. Provide educational opportunities for staff development.
3.4.8. Monitor performance improvement activities in conjunction with a Process Improvement (PI) coordinator (where applicable)
3.4.9. Serve as a liaison to administration and represent the trauma program on hospital and regional committees, to enhance trauma care.
3.4.10. Have oversight of the trauma registry

3.5. Surgical Services Staffing and Organization:

3.5.1. General Surgery:
3.5.1.1. There shall be adequate trauma surgeons assigned to the trauma service to guarantee at least two trauma surgeons are available to provide primary (in-hospital) and backup (on-call) trauma coverage 24 hours a day, 7 days a week, 365 days per year. Level I and II centers must publish the primary and backup call schedules demonstrating this.
3.5.1.2. Expectations of 'primary trauma coverage
3.5.1.3. Physically present in-hospital to meet all trauma alert patients in the resuscitation area at the time of the trauma alert patient's arrival.
3.5.1.4. To perform no elective surgery or procedures during the on-call period that would render the trauma surgeon unavailable to arrive promptly to a trauma alert patient.
3.5.1.5. To refrain from taking on-call duties with any other entity or at any other facility while on trauma call at the primary facility.
3.5.1.6. Expectations of 'back-up trauma coverage
3.5.1.7. Coordinate with the primary on-call surgeon to ensure prompt surgical response to the resuscitation bay when the primary surgeon takes a patient to surgery.
3.5.1.8. To refrain from taking on-call duties with any other entity or at any other facility while on trauma call at the primary facility
3.5.1.9. To refrain from any activity that would delay or prohibit the trauma surgeon from becoming the primary trauma surgeon when notified.
3.5.2. Evidence shall be on file that clearly describes the qualifications of each trauma surgeon to be a member of the trauma service and to take trauma calls. At a minimum, this evidence will include the following:
3.5.2.1. Proof of Tier 1 DOH consultant physician license
3.5.2.2. Board certified in general surgery
3.5.2.3. Fellowship-trained in trauma surgery, surgical critical care, acute care surgery, or equivalent
3.5.2.4. Current ATLS certification
3.5.2.5. Unrestricted privileges in general surgery
3.5.2.6. Documentation that the general surgeon manages a minimum of 28 trauma cases per year (average of seven trauma cases per quarter), at least eight of which are pediatric if the general surgeon manages pediatric trauma patients. These cases may include operative and non-operative

interventions

3.5.2.7. Evidence of 36 hours (12 hours annually on average) of trauma-related CME during the verification cycle

3.5.2.8. A surgeon who does not meet the above criteria may participate in trauma coverage if they meet the following additional criteria and are approved by the Chair of the Abu Dhabi Trauma Task Force

3.5.2.9. Completion of training equivalent to that required by the United States or Canada

3.5.2.10. Hold active membership in at least one regional, national, or international trauma organization and have attended at least one meeting during the verification period

3.5.2.11. Trauma Multidisciplinary PIPS Committee meeting attendance rate of 50% or more during the verification period

3.5.2.12. Process and outcomes of care must be comparable to that of other physicians

3.5.2.13. Demonstrates evidence of publications and/or presentations related to trauma care

3.5.2.14. The DOH, with the advice of the Abu Dhabi Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.5.3. Other surgical specialties

3.5.3.1. The following surgical specialties will ensure the ability to respond to the patient's bedside for trauma consultations within 30 minutes at all times. (KPI)

3.5.3.1.1. Orthopedic surgery

3.5.3.1.2. Neurosurgery

3.5.3.1.3. Cardiothoracic surgery

3.5.3.1.4. Vascular surgery

3.5.3.1.5. Hand surgery

3.5.3.1.6. Plastic surgery

3.5.3.1.7. Obstetrics

3.5.3.1.8. Gynecology

3.5.3.1.9. Ophthalmology

3.5.3.1.10. Otolaryngology or Oromaxillofacial surgery

3.5.3.1.11. Urologic surgery

3.5.4. All surgical service consultations referenced above will be staffed and directed by board certified, Tier 1 licensed consultant surgeons with unrestricted privileges in their specialty.

3.5.5. The DOH, with the advice of the Abu Dhabi Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.5.6. Specialist physicians or senior residents/fellows may provide initial bedside consultations for the services above provided they are closely supervised by the on-call consultant in their specialty and meet quality of care standards as determined by the Trauma Medical Director. The on-call consultant physician must still be available within 30 minutes regardless of the individual providing the initial consultation.

3.5.7. Neurosurgical response

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

3.5.7.1.1. Severe TBI (GCS less than 9) with head CT evidence of intracranial trauma

3.5.7.1.2. Moderate TBI (GCS 9-12) with head CT evidence of potential intracranial mass lesion

3.5.7.1.3. Neurologic deficit as a result of potential spinal cord injury (applicable to spine surgeon, whether a neurosurgeon or orthopedic surgeon)

3.5.7.1.4. Trauma surgeon discretion

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

3.5.8. The plan must include the following criteria:

3.5.8.1. A thorough review of each instance by the PIPS program

3.5.8.2. Monitoring of the effectiveness of the process by the PIPS program

3.5.8.3. Orthopedic surgery response

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

3.5.9.1. Hemodynamically unstable, secondary to pelvic fracture

3.5.9.2. Suspected extremity compartment syndrome

3.5.9.3. Fractures/dislocations with risk of avascular necrosis (e.g., femoral head or talus)

3.5.9.4. Trauma surgeon discretion

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

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

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

3.5.10. Surgical Theatre Availability:

3.5.10.1. Level I trauma centers must have an operating theatre (OT) staffed and available within 15 minutes of notification

3.5.10.2. In Level I centers, if the first OT is occupied, an additional OT must be staffed and available within 15 minutes of notification.

3.5.10.3. Level I and II trauma centers must have a dedicated OT prioritized for fracture care in non-emergency orthopedic trauma.

3.6. Non-Surgical Services Staffing and Organization:

3.6.1. Anesthesia

3.6.1.1. Anesthesia services must be available within 15 minutes of request at all times. These providers must be privileged and deemed capable by the Chair of Anesthesia and the Trauma Medical Director to initiate emergency cases within 15 minutes of consultation (KPI).

3.6.1.2. A Tier 1 consultant anesthesiologist with unrestricted privileges within their discipline must be present within 30 minutes of request for all operations (KPI).

3.6.1.3. The following non-surgical subspecialties must be continuously available for trauma service consultation (KPI).

3.6.1.3.1. Cardiology

3.6.1.3.2. Gastroenterology

3.6.1.3.3. Internal Medicine

3.6.1.3.4. Pediatrics

3.6.1.3.5. Infectious Diseases

3.6.1.3.6. Nephrology

3.6.1.3.7. Pulmonary Medicine

3.6.1.3.8. The following non-surgical subspecialties must be available 7 days per week for trauma servi consultation (KPI)

3.6.1.3.9. Pain Management (with expertise to perform regional nerve blocks)

3.6.1.3.10. Physiotherapy

3.6.1.3.11 Psychiatry

3.6.1.4. All consultative services provided above must be supervised by a Tier 1 consultant physician with unrestricted credentials to practice within their specialty.

3.6.1.5. The DOH, with the advice of the Abu Dhabi Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.7. Emergency Department Facility Requirements:

3.7.1. There shall be an easily accessible and identifiable resuscitation area designated for trauma alert patients. This area shall be large enough to allow assembly of the full trauma team.

3.7.2. There shall be resources, staff, and equipment necessary to treat both pediatric and adult trauma patients.

3.7.3. The trauma resuscitation area shall be of adequate size and contain adequate trauma care equipment and supplies to simultaneously perform at least two multi- system trauma alert patient resuscitations.

3.7.4. There shall be evidence of security measures in place in the resuscitation area designed to protect the life and well-being of assigned trauma center staff, patients, and families (for example, a silent or overt alarm system or an assigned security guard). (KPI)

3.7.5. There shall be facilities to accommodate the simultaneous unloading of two EMS ground units.

3.7.6. There shall be a helicopter-landing site in close proximity to the resuscitation area. Close proximity means that the interval of time between the landing of the helicopter and the transfer of the patient into the resuscitation area will be such that no harmful effect on the patient's outcome results. All helicopter landing sites shall also meet the following requirements:

3.7.6.1. The site shall be licensed by the General Civil Aviation Authority.

3.7.6.2. The use of air space shall be approved by the General Civil Aviation Authority.

3.7.6.3. Documentation shall be on file with the hospital indicating that the trauma center develops and maintains protocols and provides training during employee orientation regarding the safe loading and unloading of patients from a helicopter, as well as precautions to ensure the safety of staff or bystanders while in the vicinity of the aircraft.

3.7.7. Emergency Department Physician Requirements:

3.7.7.1. Emergency Department Medical Director: Evidence shall be on file listing the medical director for the emergency department. Evidence shall also be on file that describes the qualifications of the medical director to provide trauma-related medical and organizational leadership to physician, nursing, and hospital support staff. At a minimum, this evidence shall include the following:

3.7.7.1.1. Board certification in emergency medicine

3.7.7.1.2. Unrestricted Tier 1 consultant medical license

3.7.7.1.3. Privileges to provide trauma care within the scope of practice

3.7.7.1.4. Current ATLS certification

3.7.7.1.5. Documentation of 36 hours of trauma-related continuing medical education (CME) during a

three-year verification cycle (or average of 12 hours annually).

3.7.7.1.6. Hold active membership in at least one national or international trauma organization and have attended at least one meeting during a three-year verification cycle.

3.7.7.1.7. The DOH, with the advice of the Abu Dhabi Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.7.8. Emergency Physicians: Evidence shall be on file indicating that at least one consultant emergency physician is on duty in the emergency department 24 hours a day to cover trauma patient care services. The emergency department medical director shall ensure that the emergency physicians, during their assigned shifts, comply with the following conditions:

3.7.8.1. To be physically present in-hospital to meet all trauma alert patients in the trauma resuscitation area at the time of the trauma alert patient's arrival.

3.7.8.2. To assume trauma team leadership if the trauma surgeon on trauma call is not physically present at the time of the trauma alert patient's arrival in the trauma resuscitation area.

3.7.8.3. To coordinate the care of the trauma patient with the trauma surgeon upon his or her arrival in the resuscitation area.

3.7.9. Evidence shall be on file that clearly describes the qualifications of the emergency physician primarily responsible for the resuscitation area. At a minimum, this evidence shall include the following:

3.7.9.1. Board certified in emergency medicine

3.7.9.2. Proof of Tier 1 DOH consultant physician license

3.7.9.3. Current ATLS certification

3.7.9.4. Privileges to provide trauma care within the scope of practice

3.7.9.5. Evidence of 36 hours (12 hours annually on average) of trauma-related CME during the three-year cycle

3.7.9.6. In rare cases at a Level I center, an emergency physician who does not meet the criteria stated above may participate in trauma coverage if they meet the following additional criteria and are approved by the Chair of the Abu Dhabi Trauma Task Force:

3.7.9.6.1. Completion of training equivalent.

3.7.9.6.2. Hold active membership in at least one national, international, or regional trauma organization and have attended at least one meeting during the reporting period.

3.7.9.6.3. Trauma Multidisciplinary PIPS Committee meeting attendance rate of 50% or more during the reporting period

3.7.9.6.4. Process and outcomes of care must be comparable to that of other physicians

3.7.9.6.5. Demonstrates evidence of publications and/or presentations related to trauma care

3.7.9.7. The DOH, with the advice of the Trauma Task Force chair, retains waiver authority for all questions of staffing qualifications and adequacy.

3.7.9.8. All physicians and advanced practice providers clinically involved in the initial evaluation and resuscitation of trauma patients during the activation phase must have current ATLS certification.

3.7.10. Resuscitation Area Nursing and Support Personnel Staffing Requirements

3.7.10.1. Emergency Department nursing leadership must ensure there are an adequate number of registered nurses (RN) dedicated to the resuscitation area.

3.7.10.2. The number of nursing personnel and technical staff members assigned to provide patient care in the resuscitation area (in excess of the minimum requirement for nursing provided above) shall be established by each trauma center and shall ensure adequate care of the trauma patient and the ability to support multiple concurrent trauma activations. Non-nursing technical staff should be considered in resuscitation staffing plans and should include the following at a minimum:

3.7.10.2.1. Respiratory Therapy

3.7.10.2.2. Radiology Technologist

3.7.10.2.3. Social Worker

3.7.10.2.4. Clinical Pharmacist

3.7.10.3. To ensure accuracy in trauma registry submissions, each trauma center shall have a designated and trained staff member assigned to record pertinent patient information on a trauma flow sheet during each trauma alert 1.1.5.3.4. All resuscitation area nurses shall receive trauma-specific training (i.e., TNCC or ATCN or equivalent).

3.7.11. Resuscitation Area Documentation Requirements

3.7.11.1. The trauma team shall use an Abu Dhabi Trauma Registry compliant trauma-specific resuscitation flowsheet (paper or electronic) to document patient care in the resuscitation area.

3.7.11.2. At a minimum, the design of the flowsheet shall provide a sequential account of the following:

3.7.11.2.1. Time EMS notified hospital of inbound trauma patient

3.7.11.2.2. Time of trauma patient arrival in the resuscitation area

3.7.11.2.3. Indication for trauma alert (based on activation criteria)

3.7.11.2.4. Time of arrival for each trauma team member and physician consultants

3.7.11.2.5. Serial physiological measurements and neurological status

3.7.11.2.6. All invasive procedures performed and results

3.7.11.2.7. Laboratory tests
3.7.11.2.8. Radiological procedures (including ultrasound)
3.7.11.2.9. Time of disposition and patient destination from the resuscitation area.
3.7.11.2.10. Complete nursing assessment
3.7.11.2.11. Weight for pediatric trauma patients
3.7.11.2.12. Immobilization measures
3.7.11.2.13. Total burn surface area and fluid calculations for burn patients

3.7.12. Emergency Department Responsibilities

3.7.12.1. The emergency department shall summon the trauma team when the facility is notified of a trauma code enroute that meets hospital trauma team activation criteria.

3.7.12.2. The emergency department physician shall evaluate all trauma patients not identified as a trauma activation. Should the emergency department physician identify a patient who meets the activation criteria, they will activate the in-hospital trauma team.

3.7.12.3. The trauma team, physicians, consultants, and other support personnel shall arrive promptly when notified of a trauma team activation or consultation per the policy set by the hospital-level trauma committee (KPI).

3.7.12.3.1. The trauma team, physicians, and other support personnel shall ensure their response times are documented in each patient's record on the trauma flowsheet.

3.7.12.3.2. For the highest level of activation, at least 80% of the time, the trauma surgeon must be at the patient's bedside within 15 minutes of patient arrival. (KPI)

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

3.7.13. The trauma team responding to the highest-level activations shall comply with the policy set by the hospital trauma committee and should include, at a minimum, the following:

3.7.13.1. Trauma Team Leader (Emergency Medicine Consultant or Trauma Surgery Consultant)
3.7.13.2. Emergency Medicine Consultant
3.7.13.3. Trauma Surgery Consultant
3.7.13.4. Registered Nurses (minimum of 2)
3.7.13.5. Radiology Technician
3.7.13.6. Respiratory Therapy
3.7.13.7. Clinical Pharmacist
3.7.13.8. Anesthesia

3.7.13.9. The Trauma Medical Director may modify the team composition for all levels of trauma activations provided that the quality of care is monitored in the PIPS process demonstrating care is neither delayed nor negatively impacted.

3.8. Operating Theatre and Post-Anesthesia Recovery Area

3.8.1. The trauma center shall have at least one adequately staffed operating room prepared to initiate surgery within 15 minutes on either an adult or pediatric trauma patient 24 hours a day; this standard does not require a separate operating room for adult and pediatric patients.

3.8.2. The trauma center shall have a second adequately staffed operating room available to start a procedure within 15 minutes after the primary operating room is occupied with an adult or pediatric patient.

3.8.3. The operating team shall consist of no less than the following:

3.8.3.1. One scrub nurse or technician
3.8.3.2. One circulating registered nurse
3.8.3.3. One anesthesiologist must be immediately available

3.8.4. Post-Anesthesia Recovery (PAR) Area

3.8.4.1. Trauma centers shall have a PAR area (a surgical intensive care unit is acceptable) adequately staffed with registered nurses and other essential personnel 24 hours a day

3.8.4.2. An anesthesia or critical care physician shall be in-hospital and available to respond immediately to the PAR for care of the adult and pediatric trauma patients 24 hours a day.

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

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

3.9. Intensive Care Unit:

3.9.1. Adult ICU: Physician Requirements

3.9.1.1. The Trauma Medical Director or trauma surgeon designee must retain responsibility for adult trauma patient care in the ICU. Part of these responsibilities includes ensuring that a consultant trauma surgeon remains in charge of the patient's care to coordinate all therapeutic decisions. The trauma surgeon shall obtain consultations from medical and surgical specialists as needed to provide specific expertise.

3.9.1.2. All Level I and Level II trauma centers must be staffed with ICU physicians who are continuously

available within 15 minutes of request and whose primary responsibility is to the ICU.

3.9.1.3. A consultant trauma surgeon may transfer primary responsibility for a stable adult patient with a single-system injury (for example, neurological) from the trauma service if it is mutually acceptable to the trauma surgeon and the appropriate surgeon for the accepting service.

3.9.1.4. The in-hospital trauma surgeon shall be available to arrive promptly for adult trauma patients in the ICU for emergent situations. This coverage is not intended to replace the primary admitting trauma surgeon in caring for the patient in the ICU, it is to ensure that the patient's immediate needs will be met while the primary surgeon is being contacted.

3.9.1.5. In Level I adult trauma centers the ICU surgical director must be board certified in general surgery and surgical critical care and actively participate in unit administration.

3.9.2. Nursing Requirements:

3.9.2.1. The ratio of nurses to trauma patients in the ICU shall be a minimum of 1 nurse to 2 patients (1:2) and nurses shall be increased above this as dictated by individual patient acuity.

3.9.2.2. There shall be immediate access to clinical laboratory services

3.9.2.3. In all trauma centers an organ procurement program must be available and consist of at least the following: 3.9.2. 3.9.2.4. An affiliation with an organ procurement organization (OPO)

3.9.2.5. A written policy for notification of the regional OPO

3.9.2.6. Protocols defining clinical criteria and confirmatory tests for the diagnosis of brain death

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

3.10. Equipment:

3.10.1. Medical supplies and equipment requirements for the care of trauma patients in the treatment areas indicated below shall be readily available and shall include at a minimum the following:

3.10.2. Trauma Resuscitation Area

3.10.3. Airway control and ventilation equipment, including various sizes of laryngoscopes and endotracheal tubes, bag valve mask resuscitator, mechanical ventilator, oxygen masks, cannulas, and oxygen.

3.10.4. Difficult airway cart with airway rescue equipment

3.10.5. Integrated rapid transfusion and blood warming devices

3.10.6. Cardiopulmonary resuscitation cart, including emergency drugs, and defibrillator with pacing capability; defibrillator should have both external and internal paddles/pads.

3.10.7. Venous access devices including intraosseous and central venous access equipment

3.10.8. Doppler and ultrasound devices

3.10.9. EKG

3.10.10. Equipment and devices to monitor heart rate, pulse oximetry, and both invasive and non-invasive blood pressure

3.10.11. Skeletal traction devices

3.10.12. Standard devices and fluids for intravenous administration

3.10.13. Sterile surgical sets for surgical airways, resuscitative thoracotomy, tube thoracostomy, vascular access, general basic sets, laparotomy, caesarean section, and ICP monitoring insertion and diagnostic peritoneal lavage/aspirate

3.10.14. Suction device (including portable suction)

3.10.15. Nasogastric/orogastric tubes, thoracostomy tubes, foley catheters, and the associated drainage devices

3.10.16. Telephones and communications equipment including radio devices that may be used to communicate with other areas of the facility in the event of a loss of power, internet, or telecommunications

3.10.17. Two-way communication mechanism (and back-up) to communicate with prehospital emergency medical services

3.10.18. Hypothermia prevention devices and equipment

3.10.19. Point of care tests including (at a minimum) a blood gas device

3.10.20. Universal donor blood storage capability for immediate release access in emergencies

3.10.21. Operating Theatre:

3.10.21.1. Airway control and ventilation equipment, including various sizes of laryngoscopes and endotracheal tubes, bag valve mask resuscitator, mechanical ventilator (both fixed and portable types), suction devices, oxygen delivery devices, and both portable and fixed oxygen supplies.

3.10.21.2. Difficult airway cart with airway rescue equipment

3.10.21.3. Anesthesia delivery and monitoring equipment

3.10.21.4. Auto transfusion capability

3.10.21.5. Cardiopulmonary bypass equipment (must have a contingency plan to provide emergency cardiac surgical care if unavailable)

3.10.21.6. Cardiopulmonary resuscitation cart including emergency drugs and equipment

3.10.21.7. Craniotomy/burr hole and intracranial pressure monitoring capabilities

3.10.21.8. Endoscopy capability (including at a minimum the ability to perform rigid and fiberoptic bronchoscopy, rigid and fiberoptic esophagoscopy, upper endoscopy, ERCP and EUS, endoscopy, proctoscopy, and colonoscopy)

3.10.21.9. Invasive hemodynamic monitoring and monitoring equipment for blood pressure, pulse, oximetry, and ECG
3.10.21.10. Operating microscope
3.10.21.11. Orthopedic equipment for fixation of pelvic, long bone, spinal fractures, and fracture table
3.10.21.12. Internal and external pacing capability
3.10.21.13. Standard devices for IV medication and rapid infusion including a rapid transfusion device with fluid warning capabilities
3.10.21.14. Intravenous and intraosseous access capabilities
3.10.21.15. Thermal control devices for patients, IV fluids, and environment
3.10.21.16. X-ray, ultrasound, and Doppler ultrasound capability
3.10.21.17. Standard sterile trauma sets for exploratory laparotomy, laparoscopy, resuscitative thoracotomy, tube thoracostomy, thoracoscopy, sternotomy, vascular repair (including supplies for damage control vascular equipment such as various clamps, shunts, and Fogarty catheters), external fixation, craniotomy/craniotomy, amputation, surgical airway, and universal general basic sets.
3.10.21.18. Universal donor blood storage capability for immediate release access in emergencies
3.10.21.19. Endovascular treatment capabilities
3.10.21.20. Point of care devices for assessing coagulopathy and blood gases

3.10.22. Post-Anesthesia Recovery:
3.10.22.1. Airway control and ventilation equipment, including various sizes of laryngoscopes and endotracheal tubes, bag valve mask resuscitator, mechanical ventilator (both fixed and portable types), suction devices, oxygen delivery devices, and both portable and fixed oxygen supplies.
3.10.22.2. Difficult airway cart with airway rescue equipment
3.10.22.3. Cardiopulmonary resuscitation cart including emergency drugs and equipment (to include pacing capability)
3.10.22.4. Intracranial pressure monitoring equipment
3.10.22.5. Invasive hemodynamic monitoring and monitoring equipment for blood pressure, pulse, oximetry, and ECG
3.10.22.6. Standard devices for IV medication and rapid infusion including a rapid transfusion device with fluid warming capabilities
3.10.22.7. Sterile sets for surgical airway, resuscitative thoracotomy, and tube thoracostomy
3.10.22.8. Thermal control devices for patients and fluids
3.10.22.9. Intensive Care Unit
3.10.22.10. Airway control and ventilation equipment, including various sizes of laryngoscopes and endotracheal tubes, bag valve mask resuscitator, mechanical ventilator (portable), oxygen masks, cannulas, and oxygen.
3.10.22.11. Difficult airway cart with airway rescue equipment
3.10.22.12. Integrated rapid transfusion and blood warming devices
3.10.22.13. Cardiopulmonary resuscitation cart, including emergency drugs, and defibrillator with pacing capability; defibrillator should have both external and internal paddles/pads.
3.10.22.14. Venous access devices including intraosseous and central venous access equipment
3.10.22.15. Doppler and ultrasound devices
3.10.22.16. EKG
3.10.22.17. Equipment and devices to monitor heart rate, pulse oximetry, and both invasive and non-invasive blood pressure
3.10.22.18. Compartment pressure measurement capability
3.10.22.19. Cerebral monitoring equipment
3.10.22.20. Orthopedic equipment to support the management of pelvic fractures, long bone fractures, and spinal fractures
3.10.22.21. Scales to obtain patient weights (either integrated into beds or separate)
3.10.22.22. Sterile surgical sets for surgical airways, resuscitative thoracotomy, tube thoracostomy, vascular access, general basic sets, laparotomy, caesarean section, and ICP monitoring insertion
3.10.22.23. Standard devices for fluid warming and rapid administration
3.10.22.24. Thermal controls for patients, fluids, and the environment
3.10.22.25. Point of care blood gas device

3.10.23. Medical Surgical Unit:
3.10.23.1. Airway control and ventilation equipment, including laryngoscopes, endotracheal tubes of all sizes, bag-mask resuscitator, and sources of oxygen.
3.10.23.2. Cardiopulmonary resuscitation cart, including emergency drugs and equipment.
3.10.23.3. Standard devices and fluids for IV administration.
3.10.23.4. Suction devices

3.11. Laboratory Services

3.11.1. The trauma center shall have the following laboratory capabilities for adult and pediatric trauma alert patients available in-hospital 24 hours per day:

SERVICE	STANDARD	REQUIREMENT
Haematology Lab	CBC <60 min Coagulation labs <60 min Type and Screen/Cross <30 min Thromboelastography <30 min	Essential
Chemistry Lab	POC electrolytes <5 min POC BD/BE/Lactate <5 min Renal/liver function <60 min	Essential
POC Blood Gas	Results <5 min	Essential
Microbiology Lab	Gram Stain <60 minutes Cultures and Sensitivities	Essential
Toxicology Lab	General screening <60 min	Essential
Pregnancy Test	Urine or serum <60 min	Essential

3.11.2. Laboratory policies and protocols will be established to ensure urgent laboratory requests for trauma alert patients are prioritized above all other routine laboratory tests.

3.11.3. Laboratory policies integrated across services that include clear processes and workflows to detect, confirm, intervene, and evaluate transfusion-related complications

3.11.4. Laboratory technicians will be available in the hospital 24 hours per day to conduct laboratory studies

3.12. Blood Bank

3.12.1. An appropriately staffed blood bank will be available 24 hours per day.

3.12.2. At a minimum the blood bank must be capable to perform the following 24 hours per day:

3.12.3. Blood typing, screening, and cross matching

3.12.4. Distribute blood products (whole blood, packed red blood cells, plasma, platelets, cryoprecipitate, and factor concentrates) individually, as emergency release products, or as a part of a massive transfusion protocol

3.12.5. Level I and II trauma centers must have an adequate supply of blood products available including the immediate availability of blood products (PRBC, plasma, and platelets, or whole blood) to initiate a balanced massive transfusion.

3.12.6. In general, a Level I or II center would be expected to have no less than 8 units of universal donor whole blood (or 10 units of type O blood, five units of which must be O negative) stocked and ready for immediate dispensing at all times.

3.12.7. In general, a Level I or II center would be expected to have no less than 8 units of liquid universal donor plasma (AB or low titer A) stocked and ready for immediate dispensing at all times.

3.12.8. Centers using whole blood for MTP may reduce the amount of liquid plasma stocked to coincide with historic demand data; the Trauma Medical Director must concur with the reduction in universal donor plasma.

3.12.9. The blood bank must be headed by a physician specializing in transfusion medicine.

3.12.10. Blood bank policies and protocols describing the following will be in place:

3.12.10.1. Methods for obtaining blood products from the blood bank

3.12.10.2. Resupply, including emergency resupply, procedures for the blood bank

3.12.10.3. At a minimum the blood bank should have a policy and collect data demonstrating the ability to ensure the following blood related services are available and functioning within the intended timeframes:

3.12.10.3.1. Massive transfusion protocol: immediate

3.12.10.3.2. Emergency release red cells/plasma/platelets: immediate

3.12.10.3.3. Group-specific blood products: 20 minutes

3.12.10.3.4. Cross-matched products: 40 minutes

3.12.11. A blood bank technician shall be available in-hospital 24 hours per day.

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

3.13. Allied Health Services

3.13.1. Trauma centers must have the following allied health services available

3.13.1.1. Respiratory therapy (24/7/365)

3.13.1.2. Nutrition support

3.13.1.3. Speech therapy

3.13.1.4. Social worker (7 days per week)

3.13.1.5. Occupational therapy (7 days per week)

3.13.1.6. Physical therapy (7 days per week)

3.14. Acute Hemodialysis Capability:

3.14.1. Acute hemodialysis (including continuous renal replacement therapy) must be available for trauma patients 24 hours per day.

3.15. Radiological Services:

3.15.1. Service Capabilities: the following services must be available 24 hours per day and be accessible for patient care within the time interval specified

3.15.2. Conventional radiography—15 minutes

3.15.3. Computed tomography—15 minutes

3.15.4. Point-of-care ultrasound—15 minutes

3.15.5. Interventional radiologic procedures—1 hour

3.15.6. Magnetic resonance imaging—2 hours

3.15.7. Staffing Requirements: staff needed to provide radiological services for injured patients must be available 24 hours per day. At a minimum this includes the following:

3.15.7.1. Interventional radiology must be staffed and able to initiate an emergency procedure within an hour of consultation (KPI: 60 mins from consult to arterial puncture)

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

3.15.7.3. A consultant radiologist granted privileges by the hospital to provide radiological services for adult and pediatric patients shall be available 24 hours a day to interpret trauma-related images within one hour (KPI).

3.15.7.4. Documentation of the final interpretation of CT scans must occur not later than 12 hours after the completion of the scan.

3.15.7.5. A facility may use tele-radiology services to meet this requirement provided there is the ability for immediate telephone consultation and an internal quality assurance process demonstrating non-inferiority of remote reads

3.15.7.6. If requested, in rare circumstances, a radiologist must be able to arrive promptly for in-person consultation

3.15.7.7. Technicians

3.15.8. Facilities will ensure the following technicians are present in the hospital 24 hours per day to meet the consult-to-initiation times above for imaging studies.

3.15.8.1. Conventional radiography

3.15.8.2. Computed tomography

3.15.8.3. Ultrasonography

3.15.8.4. Facilities will ensure the following technicians are either present in the hospital or on-call to meet the consult-to initiation times above for imaging criteria

3.15.8.5. Interventional radiology

3.15.8.6. Magnetic resonance imaging

3.15.9. CT Scanner Requirements:

3.15.9.1. At least one CT scanner located in or immediately adjacent to the resuscitation area will be available 24 hours per day; scanners located in remote areas of the hospital or in mobile facilities do not meet this requirement.

3.15.9.2. If a facility only has a single CT scanner, a written policy shall be in place describing the steps to be taken if the scanner is in use or becomes temporarily inoperable. The plan must include trauma patient transfer agreements and diversion criteria/diversion implementation plan (as appropriate).

3.15.9.3. At a minimum radiology-specific policies and protocols must be in place addressing the following situations

3.15.9.3.1. Transportation to and from different radiology areas

3.15.9.3.2. Monitoring while in radiology areas

3.15.9.3.3. Protection of invasive lines/devices

3.15.9.3.4. Waiving consent for contrast administration

3.15.9.3.5. Contrast injection procedures addressing all types of venous access

3.15.9.3.6. Trauma scans during pregnancy

3.15.9.3.7. Trauma scans in pediatric patients

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

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

3.16. Organized Burn Care

3.16.1. All trauma centers must have a protocol in place for treating burn patients that has been developed in collaboration with the regional burn center. The protocol must include, at a minimum, clinical guidelines addressing: airway management, burn resuscitation, wound care, analgesia, and time-critical considerations in burned patients (e.g., evaluation and treatment of compartment syndrome, electrolyte abnormalities, carbon monoxide (or other inhalation) poisoning).

3.16.2. All trauma centers without a co-located burn center must have a written transfer agreement with a regional burn center that clearly specifies indications for interfacility transfer, and a process to secure urgent and non-urgent burn evaluations when interfacility transfer is not required.

3.16.3. All trauma centers must have a written plan identifying clinicians who will maintain advanced training in burn resuscitation (e.g., Advanced Burn Life Support or equivalent) and a plan to manage the acutely burned patient for up to 48 hours if necessary.

3.17. Acute Spinal Cord and Brain Injury Management Capability

3.17.1. All trauma centers must have written policies and procedures for triage, assessment, stabilization, emergency treatment, and transfer (either into or out of the facility) for brain or spinal cord injured patients.

3.17.2. Out-of-facility transfer plans must have written transfer agreements with centers capable of managing patients with acute CNS injuries. These transfer agreements must include clear indications for transport and address staffing levels required for interfacility transfer.

3.17.3. At a minimum all centers must have policies or protocols addressing the following aspects of care for patients with acute CNS injuries

3.17.3.1. In-hospital management

3.17.3.2. Rehabilitation

3.17.3.3. Pressure injury prevention

3.18. Acute Rehabilitative Services

3.18.1. All trauma centers must meet the rehabilitation needs of trauma patients by

3.18.2. Developing protocols that identify which patients will require rehabilitation services during the acute inpatient stay

3.18.3. Establishing processes that determine the rehabilitation care, needs, and services required during the acute inpatient stay

3.18.4. Ensuring that the required services during acute inpatient stays are provided in a timely manner

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

3.19. Psychosocial Support Systems

3.19.1. All trauma centers will have written policies and protocols to provide mental health services, child protective services, and emotional support to trauma patients or their families by having:

3.19.1.1. A protocol to screen patients at high risk for psychological sequelae with subsequent referral to a mental health provider

3.19.1.2. A process for a referral to a mental health provider when required

3.19.2. All trauma centers must screen all admitted trauma patients greater than 12 years old for alcohol misuse with a validated tool. Programs must achieve a screening rate of at least 80%.

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

3.20. Outreach Programs

3.20.1. All trauma centers must have an injury prevention program that:

3.20.1.1. Has a designated injury prevention professional

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

3.20.1.3. Prioritizes injury prevention work based on trends identified in the trauma registry and local epidemiological data

3.20.1.4. Implements at least two activities over the course of the verification cycle with specific objectives and deliverables that address separate major causes of injury in the community (KPI)

3.20.1.5. Demonstrates evidence of partnerships with community and/or government organizations to support their injury prevention efforts.

3.20.1.6. All trauma centers shall provide haemorrhage control training both in the community and in targeted settings within their catchment area. This training, and the paired supply distribution, will be documented (KPI)

3.21. Quality Management

3.21.1. All trauma centers will develop and implement a trauma performance improvement and patient safety (PIPS) program.

3.21.2. The PIPS program must be independent of the hospital or departmental PI programs but must report to the hospital or departmental PI program.

3.21.3. The PIPS program must be empowered to identify opportunities for improvement and develop actions to reduce the risk for patient harm, irrespective of the department, service, or provider.

3.21.4. In addition to the PIPS process providing feedback to hospital or departmental quality programs, the hospital or departmental quality programs must also provide feedback and loop closure to the trauma program (bidirectional flow of information).

3.21.5. All trauma centers must have a written PIPS plan that:

3.21.5.1. Outlines the organizational structure of the trauma PIPS process, with a clearly defined relationship to the hospital PI program.
3.21.5.2. Specifies the processes for event identification.
3.21.5.3. Events may be brought forth by a variety of sources, including but not limited to individual personnel reporting, morning report or daily sign-outs, case abstraction, registry surveillance, use of clinical guideline variances, patient relations, or risk management.
3.21.5.4. Includes a list of audit filters, event review, and report review that must include, at a minimum, those listed in [**Please refer to APPENDIX 1**].

3.21.6. Defines levels of review (primary, secondary, tertiary, and/or quaternary), with a listing for each level that clarifies:
3.22.6.1. Which cases are to be reviewed
3.22.6.2. Who performs the review
3.22.6.3. When cases can be closed or must be advanced to the next Level
3.22.6.4. Specifies the members and responsibilities of the trauma Multidisciplinary PIPS Committee
3.22.6.5. Outlines an annual process for identification of priority areas for PI, based on audit filters, event reviews, and benchmarking reports

3.21.7. All trauma centers must have documented evidence of
3.22.7.1. Event identification
3.22.7.2. Effective use of audit filters
3.22.7.3. Demonstrated loop closure
3.22.7.4. Attempts at corrective actions
3.22.7.5. Strategies for sustained improvement measured over time
3.22.7.6. All trauma centers must participate in a risk-adjusted benchmarking program and use the results to determine whether there are opportunities for improvement in patient care and registry data quality
3.22.7.7. In all trauma centers, trauma registry data must be collected in compliance with the NTDS inclusion criteria and data element definitions, and must have been submitted to the TQP data center in the most recent call for data
3.22.7.8. In all trauma centers a physician from the emergency department or trauma program must participate in the prehospital PI process including assisting in the development of prehospital care protocols relevant to the care of trauma patients
3.22.7.9. All trauma programs must have a Multidisciplinary PIPS Committee with the authority and administrative support to implement changes related to the processes of care and outcomes across multiple specialty departments.
3.22.7.10. The trauma Multidisciplinary PIPS Committee must be chaired by the TMD or an associate TMD.

3.21.8. The Multidisciplinary PIPS Committee must have the following designated liaisons, all of whom must be licensed as consultants, board certified in their specialty, and possess unrestricted privileges in their specialty
3.22.8.1. Emergency medicine
3.22.8.2. Orthopedic surgery
3.22.8.3. Anesthesia
3.22.8.4. Neurosurgery
3.22.8.5. Radiology
3.22.8.6. Critical care
3.22.8.7. Geriatrics provider

3.21.9. All trauma centers must meet the following trauma Multidisciplinary PIPS Committee meeting attendance thresholds:
3.22.9.1. 60% of meetings for the TMD
3.22.9.2. 50% of meetings for each trauma surgeon
3.22.9.3. 50% of meetings for the liaisons (or one predetermined alternate) from emergency medicine, neurosurgery, orthopedic surgery, critical care medicine, anaesthesia, and radiology
3.21.9.4. Combined adult (level I/II) and pediatric (Level II) trauma centers must have 50% attendance by a representative (TMD or one predetermined alternative) from the other program; this representative is responsible for disseminating information to panel members of the other program
3.21.9.5. Attendance requirements may be met by teleconference or videoconference
3.21.9.6. Trauma Multidisciplinary PIPS Committee meeting attendance may be waived for military missions/deployments, medical leave, and humanitarian missions. Documentation in support of absences must be provided by the trauma centers
3.21.9.7. The minimum attendance for liaisons is based on the combined attendance for the alternate and the liaison. If the TMD also serves as the ICU director, this person meets the minimum attendance threshold as the TMD and the ICU director
3.21.9.8. If a trauma surgeon only serves as a backup (i.e., never the first call for trauma surgery), they are

not subject to attendance requirements.

3.21.9.9. The TMD should disseminate information discussed in these meetings to everyone involved in caring for trauma patients

3.21.10. In all trauma centers, all cases of trauma-related mortalities must be reviewed and classified for potential opportunities for improvement

3.22.10.1. All deaths must be categorized as

3.22.10.1.1. Mortality with opportunity for improvement

3.22.10.1.2. Mortality without opportunity for improvement

3.21.11. Mortalities include patients who are dead on arrival, patients who die in the emergency department, patients who die in the hospital (even with Do Not Resuscitate orders), and patients who are transferred out of the facility for end-of-life care

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

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

3.21.14. NSAs not meeting these criteria may be closed in primary review

3.21.15. In all trauma centers, all instances of diversion must be reviewed by the Multidisciplinary PIPS Committee

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

3.21.17. EMS agencies, related to the accuracy of triage and provision of care

3.21.18. Referring providers, related to the care and outcomes of their patients and any potential opportunities for improvement in initial care

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

3.21.20. All trauma centers must have at least 0.5 FTE dedicated performance improvement (PI) personnel when the annual volume of registry patients exceeds 500 patients. The count of entries is defined as all patients that meet inclusion criteria for the Abu Dhabi Trauma Registry.

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

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

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

3.21.24. Ensuring data validity is an important part of a data quality plan.

3.21.25. Validation may be internal or external

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

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

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

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

3.21.30. All trauma centers must have the following CPGs, protocols, or algorithms, at a minimum, in place, which have been approved by the TMD.

3.21.30.1. Rapid reversal protocol for patients on anticoagulants

3.21.30.2. Clearly defined transfer protocols that include the types of patients, expected time frame for initiating and accepting a transfer, and predetermined referral centers for outgoing transfers

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

3.21.30.4. Diversion protocols specifying the mechanism for initiating diversion status, the process for notifying dispatch, health regulator and EMS agencies, and a diversion log to record reasons for and duration of diversions

3.21.30.5. No trauma center may exceed 400 hours of diversion during the reporting period

3.21.30.6. Management of the hemodynamically unstable patient with a pelvic ring injury

3.21.30.7. Management long bone fractures in patients with multiple injuries (e.g., time to fixation, order of fixation, and damage control versus definitive fixation strategies)

3.21.30.8. Open extremity fracture management (e.g., time to antibiotics, time to OT for operative debridement, and time to wound coverage for open fractures)

3.21.30.9. Hip fractures in geriatric patients (e.g., expected time to OT)

3.21.30.10. All trauma centers must have a process in place to assess children for non-accidental trauma

3.22. Disaster Planning and Management

3.22.1. In Level I centers the trauma surgeon liaison to the disaster committee must have completed the Disaster

Management and Emergency Preparedness (DMEP) course at least once

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

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

3.22.4. A surgeon from the trauma panel must be included as a member of the hospital's disaster committee and be responsible for the development of a surgical response to a mass casualty event; at Level I and II centers this individual should be a consultant surgeon

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

3.22.6. The surgical response must outline the critical personnel, means of contact, initial surgical triage (including subspecialty triage when appropriate), and coordination of secondary procedures

3.22.7. The trauma program must participate in two hospital drills or disaster plan activations per year that include a trauma response and are designed to refine the hospital's response to mass casualty events. (KPI)

3.23. Trauma Research

3.23.1. Level I trauma centers must demonstrate support for a trauma research program.

3.23.1.1. Evidence of support for trauma research would include

3.23.1.1.1. Basic laboratory space

3.23.1.1.2. Sophisticated research equipment

3.23.1.1.3. Advanced information systems

3.23.1.1.4. Bio statistical support

3.23.1.1.5. Salary support for basic and translational scientists, or seed grants for junior investigators

3.23.1.1.6. The institution will have a designated trauma research director and demonstrate current involvement in and commitment to research in adult and pediatric trauma care.

3.23.2. Level I trauma centers shall demonstrate the following scholarly activities during a rolling three-year cycle (KPI)

3.23.2.1. At least 10 trauma related research articles

3.23.2.2. At least three articles must be authored by general or pediatric trauma surgeons

3.23.2.3. Research activity must be performed at a trauma center

3.23.2.4. If case-series are to be counted, they must include more than five patients

3.23.2.5. Basic science research must involve topics directly related to the pathophysiology of injury

3.23.2.6. At least three articles must be from disciplines, other than general or pediatric surgery

3.23.2.7. All articles must be published or accepted for publication in peer reviewed and indexed journals

3.23.2.8. Authors from the trauma center must meet accepted authorship requirements of the International Committee of Medical Journal Editors

3.23.3. One paper from acute care surgery may be included

3.23.3.1. Participation by at least one trauma program, faculty member as a visiting, professor, invited, lecturer, or speaker at a regional, a national, or international trauma conference

3.23.3.2. Support of residents or fellows in any of the following scholarly activities: laboratory experiences, clinical trials, resident trauma, paper, competitions, and other resident trauma research presentations

3.24. Education: Professional and Community Outreach

3.24.1. All trauma centers must provide public and professional trauma education, examples include the following:

3.24.1.1. Advanced Trauma Life Support

3.24.1.2. International Trauma Life Support

3.24.1.3. Prehospital Trauma Life Support

3.24.1.4. Stop the Bleed

3.24.1.5. Trauma Evaluation and Management

3.24.1.6. Advanced Burn Life Support

3.24.2. All trauma centers must provide trauma orientation to new nursing staff caring for trauma patients. Examples of orientation may include.

3.24.2.1. Center-developed educational program that integrates PIPS identified issues

3.24.2.2. Education specific to patient population served

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

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

3.24.3. Examples of nursing education may include:

3.24.3.1. Advanced Trauma Care for Nurses

3.24.3.2. Trauma Nursing Core Course

3.24.3.3. Pediatric Care After Resuscitation

3.24.3.4. Trauma Care After Resuscitation

3.24.3.5. Transport Nurse Advanced Trauma Course

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

3.24.4.1. Level I trauma centers must have a trauma rotation with defined objectives and curriculum for senior and general surgical residents.

3.24.4.2. In Level I trauma centers, all general surgery residents must be assigned to the trauma rotation for a minimum of three months during their final two years of clinical training to ensure sufficient exposure to trauma care.

3.24.4.3. Level I trauma centers must have trauma surgery coverage by general surgery residents in their last two years of clinical training. If the number of eligible residents is insufficient to ensure coverage, residents in their final three years of training and/or fellows are acceptable.

3.24.4.4. All general surgery residents and/or fellows must be from a Tier I accredited program.

4. Key stakeholder Roles and Responsibilities

This standard is based on international standards and best practices to allow effective local, regional, and international benchmarking and the performance improvement/ quality assurance of clinical care. Adherence to these requirements drives common standards and interoperability across the Abu Dhabi Trauma System and compliance with international standards and best practices and alignment with accreditation requirements. Governance of the policies, protocols, and processes is through DOH sponsored Task Forces.

5. Monitoring and Evaluation

5.1. Monitoring of the Key Performance Measures of Trauma Center Level – I will be done, following the international standards and the appropriate checklist of ACS to monitor the compliance with evidence-based practices.

6. Enforcement and Sanctions

Regulatory authorities will remain with the current DOH Sectors with regards to licensing of providers and practitioners and be in accordance with the requirements captured in the policy document. Failure to adhere to the requirements will impact the medical direction of patients within the Trauma System, avoiding the services of providers failing to comply, and may result in fines and penalties.

7. Relevant Reference Documents

No.	Reference Date	Reference Name	Relation Explanation / Coding / Publication Links
1	Year 2008	ACS (American College of Surgeons) White Book	Regional Trauma Systems: Optimal Elements Integration and Assessment.
2	Year 2022	ACS (American College of Surgeons) Grey Book	Resources for Optimal Care of the Inured Patient Standards. Link: https://www.facs.org/quality-programs/trauma/quality/verification-review-and-consultation-program/standards
3	Year 2023	National Trauma Data Standard (NTDS)	https://www.facs.org/quality-programs/trauma/quality/national-trauma-data-bank/national-trauma-data-standard/

8. Appendices

8.1. Appendix 1: Minimum Required Audit Filters, Event, Or Report Reviews

8.1.1. Surgeon arrival time for the highest level of activation.
8.1.2. Delay in response for urgent assessment by the neurosurgery and orthopaedic specialists.
8.1.3. Delayed recognition of or missed injuries.
8.1.4. Compliance with prehospital triage criteria, as dictated by regional protocols.
8.1.5. Delays or adverse events associated with prehospital trauma care.
8.1.6. Compliance of trauma team activation, as dictated by program protocols.
8.1.7. Accuracy of trauma team activation protocols.
8.1.8. Delays in care due to the unavailability of emergency department physician (Level III).
8.1.9. Unanticipated return to the OR.
8.1.10. Unanticipated transfer to the ICU or intermediate care.
8.1.11. Transfers out of the facility for appropriateness and safety.
8.1.12. All nonsurgical admissions (excludes isolated hip fractures).
8.1.13. Radiology interpretation errors or discrepancies between the preliminary and final reports.
8.1.14. Delays in access to time-sensitive diagnostic or therapeutic interventions.
8.1.15. Compliance with policies related to timely access to the OR for urgent surgical intervention.
8.1.16. Delays in response to the ICU for patients with critical needs.
8.1.17. Lack of availability of essential equipment for resuscitation or monitoring.
8.1.18. MTP activations.
8.1.19. Significant complications and adverse events.
8.1.20. Transfers to hospice.
8.1.21. All deaths: inpatient, died in emergency department (DIED), DOA.
8.1.22. Inadequate or delayed blood product availability.
8.1.23. Patient referral and organ procurement rates.
8.1.24. Screening of eligible patients for psychological sequelae.
8.1.25. Delays in providing rehab services.
8.1.26. Screening of eligible patients for alcohol misuse.
8.1.27. Paediatric admissions to non-paediatric trauma centers.
8.1.28. Neurotrauma care at Level III trauma centers.
8.1.29. Neurotrauma diversion