EMS / TRAUMA SYSTEM DEVELOPMENT

American College of Surgeons Optimal Elements, Integration and Assessment System Consultation
Model Trauma System Planning and Evaluation

Benchmarks are global overarching goals, expectations, or outcomes. In the context of the trauma system, a benchmark defines identifies a broad system attribute.

Indicators are tasks or outputs that characterize the benchmark. Indicators identify actions or capabilities within the benchmark and are the measurable components of the benchmark.

Scoring breaks down the indicator into completion steps. Scoring provides an assessment of the current status and marks progress over time toward reaching a defined milestone.

HRSA 2006 Model Trauma System Plan			
OPTIMAL ELEMENTS	State	Region	Comments
Injury Epidemiology			
1. Documented description of the epidemiology of injury in the TSA using population-based data and clinical databases. (B-101)	E	E	
2. Epidemiology of injury mortality in the TSA is defined. (I-101.1)	E	E	
3. Description of injuries in the TSA (I-101.2) Geographic area Urban Suburban Rural Specific populations: Pediatrics (Age less than 15) Geriatrics Morbidly Obese Cultural / ethnic Co-morbidities E-codes: Incidence, prevalence ISS Breakdown Trauma patient distribution Level I Trauma Center Level II Trauma Center Level III Trauma Center Level IV Trauma Center Designated Pediatric Trauma Center Non-Trauma Center Injury data is updated annually.	E	E	
4. Injury mortality is compared. (I-101.3) County level TSA Statewide National	E	E	
5. Injury risk assessment is completed in collaboration with EMS, Public Health, and trauma center leaders. (I-101.4)	E	E	

6. Special-at-risk populations are identified in collaboration with EMS, Public Health and trauma center leaders.(I-101.7)	E	E	
7. Collected data are used to evaluate system performance and develop public policy. (B-205)	E	E	
8. Injury prevention programs use trauma management information system data to develop intervention strategies (I-205.4)	E	E	
9. Trauma, public health and emergency preparedness systems are closely linked. (B-208)	E	E	
10. Trauma system and public health systems have established links: (I-208.1) Population based public health surveillance Evaluation for acute and chronic traumatic injury Injury prevention	E	D	
11. The TSA, in cooperation with other entities uses analytical tools to monitor the performance of population-based prevention and trauma care services. (B-304.1)	E	E	
12. The TSA, along with partner organizations, prepares annual reports on the status on injury prevention and trauma care in the region. (I-304.1)	E	E	
13. The trauma system management information database is available for routine public health surveillance. There is concurrent access to the databases for the purposes of routine surveillance and monitoring of health status and is shared responsibly. (I-304.2)	E	D	
Indicators as a Tool for System Assessment)			
1. Assurance to constituents that services necessary to achieve agreed-on goals are provided by encouraging actions of others, requiring action through regulation, or providing services directly. (B-300)	State	State	
Statutory Authority and Administrative Rules			
1. Comprehensive state statutory authority and administrative rules support trauma system leaders and maintain trauma system infrastructure, planning, and developments. (B-201)	State E	S	
2. The legislative authority states that all the trauma system components, EMS, injury control, incident management, and planning documents work together for the effective implementation of the trauma system. (I-201.2)	State E	S	
3. Administrative rules and regulations direct the development of operational policies and procedures at the state, regional and local levels. (I-201.3)	State E	S	
4. DSHS acts to protect the public welfare by enforcing various laws, rules, and regulations as they pertain to the trauma system. (B-311)	State E	S	

5. Laws, rules, and regulations are routinely reviewed and revised to continually strengthen and improve the trauma system. (I-311.4)	E	E	
System Leadership			
1. Trauma system leaders (DSHS, RAC, EMS, trauma center personnel and public health use a process to establish, maintain, and constantly evaluate and improve a comprehensive trauma system in cooperation with medical, professional, governmental, and other citizen organizations (B-202)	E	E	
2. Collected data are used to evaluate system performance and to develop public policy. (B-205)	E	E	
3. Trauma system leaders, including a trauma-specific statewide multidisciplinary, multiagency advisory committee, regularly review system performance reports. (B-206)	E	E	
4. DSHS informs and educates state, regional, and local constituencies and policy makers to foster collaboration for system enhancement and injury control. (B-207)	State E	E	
Coalition Building and Community Support			
1. (B-207) DSHS informs and educates state, regional, and local constituencies and policy makers to foster collaboration and cooperation for system enhancement and injury control.	State	S/ E	
Lead Agency and Human Resources			
1. Comprehensive state statutory authority and administrative rules support trauma system leaders and maintain trauma system infrastructure, planning, oversight, and future developments. (B-201)	State E	S	
2. The legislative authority plans, develops, implements, manages and evaluates the trauma system and its component parts, including the identification of the lead agency and the designation of trauma facilities. (I-201.1)	State E	S	
3. The lead agency has adopted clearly defined trauma system standards (for example: facility criteria, triage and transfer guidelines, and data collection standards) and has sufficient legal authority to ensure and enforce compliance. (I-204)	E State	S	
4.. (B-204)	State E	S	
Trauma System Plan			
1. The state lead agency has a comprehensive written trauma system plan based on national guidelines. The plan integrates the trauma system with EMS, public health, emergency preparedness, and incident management. The written trauma system plan is written in collaboration with	E	E	

community partners. (B-203)			
2. The trauma system plan clearly describes the system design (including the components necessary to have an integrated inclusive trauma system) and is used to guide regional system implementation and management. The plan includes references to regulatory standards and documents and includes methods of data collection and analysis. (I-203.4)	E	E	
System Integration			
1. The state lead agency has a comprehensive written trauma system plan based on national guidelines. The plan integrates the trauma system with EMS, public health, emergency preparedness, and incident management. The written trauma system plan is written in collaboration with community partners. (B-203)	State E	E	
2. The trauma system plan clearly describes the system design (including the components necessary to have an integrated inclusive trauma system) and is used to guide regional system implementation and management. The plan includes references to regulatory standards and documents and includes methods of data collection and analysis. (I-203.4)	State E	E	
3. The trauma, public health, and emergency preparedness Systems are closely linked. (B-208)	E	E	
Financing			
1. Sufficient resources, including financial and infrastructure - related, support system planning, implementation and maintenance. (B-204)	State E	E	
2. Financial resources exist that support the planning, implementation, and on-going management of the administration and clinical care components of the trauma system. (I-204.2)	E	E	
3. Designated funding for trauma system infrastructure support is legislatively appropriated. (I-204.4)	State E	S/E	
4. Operational budgets (system, facilities, and EMS administrative and operational budgets) are aligned with the trauma system plan and priorities. (I-204.4)	E State	E	
5. The financial aspects of the trauma system are integrated into the overall performance improvement system to ensure on-going fine-tuning and cost-effectiveness. (B-309)	State E	E	
6. Collection and reimbursement data are submitted by each agency or institution on at least an annual basis. Common definitions exist for collection and reimbursement data and are submitted by each agency. (I-309.2)	E	D	
Prevention and Outreach			
1. The lead agency informs and educates state, regional, and local constituencies and policy makers to foster collaboration and cooperation for system enhancement and	State	E	

injury control. (B-207)			
2. The trauma system leaders inform and educate constituencies and policy makers through community development activities, targeted media messaging, and active collaboration aimed at injury prevention and trauma system development. (I-207.2)	E	E	
3. The lead agency, in cooperation with other agencies and organizations, uses analytical tools to monitor the performance of population-based prevention and trauma care services. (B-304)	E	E	
4. The lead agency, along with partner organizations, prepares annual reports on the status of injury prevention and trauma care in the state, region and local areas. (I-304.1)	E	E	
5. The lead agency ensures that the trauma system demonstrates prevention and medical outreach activities within its defined service area. (B-306)	E	E	
6. The trauma system is active within its jurisdiction in the evaluation of community-based activities, injury prevention and response programs. (I-306.2)	E	E	
7. The impact and outcomes of the outreach programs is evaluated as part of a system performance improvement process. (I-306.3)	E	E	
Emergency Medical Services			
1. The trauma system is supported by EMS systems that include communication, medical oversight, prehospital triage, and transportation; the trauma system, EMS, and public health are well integrated.	State E	E/S	
2. There is well-defined trauma system medical oversight integrating the specialty needs of the trauma system with the medical oversight for the overall EMS system. (I-302.2)	E	E	
3. There is a clearly defined, cooperative, and ongoing relationship between the trauma specialty physician leaders and the EMS system medical directors. (I-302.2)	E	E	
4. There is clear-cut legal authority and responsibility and for the EMS system medical director, including authority to adopt protocols, to implement a performance improvement system, to restrict the practice of prehospital providers, and to generally ensure medical appropriateness of the EMS system. (-302.4)	E	D	
5. The trauma system medical director is actively involved with the development, implementation, and ongoing evaluation of system dispatch protocols to ensure they are congruent with the trauma system design. These protocols include but are not limited to, which resource to dispatch, (example: ALS	E	E	

verses BLS), air-ground coordination, early notification of the trauma care facility, prearrival instructions, and other procedures necessary to ensure that resources dispatched are consistent with the needs of the injured patient. (I-302.4)			
6. The retrospective medical oversight of the EMS system for trauma triage, communications, treatment, and transport is closely coordinated with the established performance improvement process of the trauma system. (I-302.5)	Ee	E/S	
7. There is a universal access number for citizens to access the EMS/trauma system, with dispatch appropriate medical resources. There is a central communication system for the EMS/trauma system to ensure field-to-facility bidirectional communication, interfacility dialogue, and all-hazards response communications among all system participants. (I-302.7)	E	E	
8. There are sufficient and well-coordinated transportation resources to ensure that EMS providers arrive at the scene promptly and expeditiously transport the patient to the correct hospital by the correct transportation mode. (I-302.8)	E	E	
9. The lead trauma authority ensures a competent workforce. (B-310)	E	S/N	
10. In cooperation with the prehospital certification and licensure authority, set guidelines for prehospital personnel for initial and ongoing trauma training, including trauma-specific courses and courses that are readily available throughout the state. (I-310.1)	E	S/D	
11. In cooperation with the prehospital certification and licensure authority, ensure that prehospital personnel who routinely provide care to trauma patients have a current trauma training certificate, for example, Prehospital Trauma Life Support or Basic Trauma Life Support and others, or that trauma training needs are driven by the performance improvement process. (I-310.2)	E	S/D	
12. Conduct at least one multidisciplinary trauma conference annually that encourages system and team approaches to trauma care. (I-310.9)	E	E	
13. The lead agency acts to protect the public welfare by enforcing various laws, rules, and regulations as they pertain to the trauma system. (B-311)	E	S	
14. Incentives are provided to individuals agencies and institutions to seek state or nationally recognized accreditation in areas that will contribute to overall improvement across the trauma system. Commission on Accreditation of Ambulance Service council of Allied Health Education Accreditation	E	D	

American College of Surgeons Trauma Facility Verification			
Definitive Care Facilities			
1. Acute care facilities are integrated into a resource - efficient, inclusive network that meets required standards and that provides optimal care for all injured patients.	E	D	
2. The trauma system plan has clearly defined the roles and responsibilities of all acute care facilities treating trauma and of facilities that provide care to specialty populations.	E	S	
3. To maintain its state, regional, or local designation each hospital will continually work to improve the trauma care as measured by patient outcomes. (B-307)	E HTD	S	
4. The trauma system engages in regular evaluation of all licensed acute care facilities that provide trauma care to trauma patients and of designated trauma hospitals. Such evaluations will involve external reviews. (I-307.1)	E HTD	S	
5. The lead trauma authority ensures a competent workforce. (B-310).	E HTD	S HTD	
6. As part of the established standards, set appropriate levels of trauma training for nursing personnel who routinely care for trauma patients in acute care facilities. (I-310.3)	State	S	
7. Ensure that appropriate, approved trauma training courses are provided for nursing personnel on a regular basis. (I-310.4)	E HTD D	S	
8. In cooperation with the nursing licensure authority, ensure that all nursing personnel who routinely provide care to trauma patients have trauma training certification (for example: Advanced Trauma Care for Nurses or Trauma Nurses Core Courses, or any national or state trauma nurse verification course.) As an alternate after initial trauma course completion, training can be driven by the performance improvement process. (I-310.5)	E HTD D	S	
9. In cooperation with the physician licensure authority, ensure that the physicians who routinely provide care to trauma patients have a current trauma training certificate of completion, for example, Advanced Trauma Life Support (ALTS) and others. As an alternative, physicians may maintain trauma competence through continuing medical education programs after initial ATLS completion (I-310.8)	E HTD	S	
10. Conduct at least one multidisciplinary trauma conference annually that encourages system and team approaches to trauma care. (I-310.9)	E	E	
11. As new protocols and treatment approaches are instituted within the system, structured mechanisms are in place to inform all personnel about the changes in a timely manner.	E	E	

(I-310.10)			
System Coordination and Patient Flow			
1. The trauma system is supported by an EMS system that includes communications, medical oversight, prehospital triage, and transportation; the trauma system, EMS system, and public health agency are well integrated. (B-301)	E	E	
2. There are mandatory system-wide prehospital triage criteria to ensure that trauma patients are transported to an appropriate facility based on their injuries. These triage criteria are regularly evaluated and updated to ensure acceptable and system-defined rates of sensitivity and specificity for appropriately indentifying a major trauma patient. (I-302.6)	E	E	
3. There is a universal access number for citizens to access the EMS / trauma system, with dispatch of appropriate medical resources. There is a central communication system for EMS / trauma system to ensure field -to -facility bidirectional communications, interfacility dialogue, and all-hazards response communications among all system participants. (I-302.7)	E	E	
4. There is a procedure for communications among medical facilities when arranging for interfacility transfers, including contingencies for radio and telephone system failure. (I-302.9)	E	E	
5. Acute care facilities are integrated into a resource-efficient inclusive network that meets required standards and that provides optimal care for all injured patients. (B-303)	E	E	
6. When injured patients arrive at a medical facility that cannot provide the appropriate level of definitive care, there is an organized and regulatory system to ensure that the patients are expeditiously transferred to appropriate system-defined trauma facilities. (I-303.4)	E	E	
Rehabilitation			
1. The lead agency ensures that adequate rehabilitation facilities have been integrated into the trauma system and that these resources are made available to all populations requiring them. (B-308)	E	S	
2. The lead agency has incorporated, within the trauma system plan and the trauma center standards, requirements for rehabilitation services, including transfer of trauma patients to rehabilitation facilities. (I-308-1)	E	S	
3. Rehabilitation centers and outpatient rehabilitation services provide data on trauma patients to the central trauma system registry that includes final disposition, functional outcome, and rehabilitation cost and also participate in	e	S/D	

performance improvement process. (I-308.2)			
4. A resource assessment for the trauma system has been completed and is regularly updated. (B-103)	E	E	
5. The trauma system has completed a comprehensive system status inventory that identifies the availability and dist-tribution of current capabilities and resources. (I-103.1)	E	E	
Disaster Preparedness			
1. An assessment of the trauma system's emergency preparedness has been completed, including coordination with the public health agency, EMS system, and the Emergency Management system. (B-104)	E	E	
2. There is a resource assessment of the trauma system's ability to expand its capacity to response to MCIs in an all hazard approach. (I-104.1)	E	E	
3. There has been a consultation by external experts to assist in identifying current status and needs of the trauma system to be able to respond to MCIs. (I-104.2)	E	E	
4. The trauma system has completed gap analysis based on the resource assessment for trauma emergency preparedness. (I-104.3)	E	E	
5. The lead agency ensures that its trauma system plan is integrated with, and complementary to, the comprehensive mass casualty plan for natural and manmade incidents, including an all-hazards approach to planning and operations. (B-305)	E	E	
6. The EMS, trauma system and the all-hazards medical response system have operational trauma and all-hazards response plans and have established an ongoing cooperative working relationship to ensure trauma system readiness for all-hazards events. (I-305.1)	E	E	
7. All-hazards events routinely include situations involving natural, unintentional, and intentional trauma-producing events that test the expanded response capabilities and surge capacity of the trauma system. (I-305.2)	E	E	
8. The trauma system, through the lead agency, has access to additional equipment, materials, and personnel for large-scale traumatic event. (I-305.3)	E	E	
System-wide Evaluation and Performance Improvement			
1. The trauma management information system is used to facilitate ongoing assessment and assurance of system performance and outcomes and provides a basis for continuously improving the trauma system, including the cost-benefit analysis. (B-301)	E	E	
2. The lead trauma authority ensures that each member hospital /EMS of the trauma system collects and uses patient data, as	E	D	

well as provider data, to assess system performance and to improve quality of care. Assessment data are routinely submitted to the lead trauma authority. (I-301.1)			
3. The jurisdictional lead agency, in cooperation with the other agencies and organizations, uses analytic tools to monitor the performance of population-based prevention and trauma care services. (B-304)	E	D	
4. The financial aspects of the trauma system are integrated into the overall ongoing fine-tuning and cost-effectiveness. (B-309)	E	E	
5. Financial data are combined with other cost, outcome, or surrogate measures, for example, years of potential life lost, quality-adjusted life years, and disability-adjusted life years; length of stay; length of intensive care unit stay; number of ventilator days; and others to estimate and track true system costs and cost-benefits. (I-309.4)	E	E	
Trauma Management Information System (TMIS)			
1. There is an established trauma TMIS for ongoing injury surveillance and system performance assessment. (B-102)	E	E	
2. There is an established injury surveillance process that can in part, be used as an MIS performance measure. (I-102.1)	E	E	
3. Injury surveillance is coordinated with statewide and local community health surveillance. (I-102.2)	E	E	
4. There is a process to evaluate the quality, timeliness, completeness, and confidentiality of data. (I-102.4)	E	E	
5. There is an established method of collecting trauma financial data from all health care facilities/EMS agencies, and trauma agencies, including patient charges and administrative/system costs. (I-102.5)	E	E	
6. The TMIS is used to facilitate ongoing assessment and assurance of system performance and outcomes and provides a basis for continuously improving the trauma system, including a cost-benefit analysis. (B-301)	E	E	
7. The lead trauma authority ensures that each member Hospital/EMS of the trauma system collects and uses Patient data, as well as provider data, to assess system Performance and to improve quality of care. Assessment Data are routinely submitted to the lead trauma authority. (I-301.2)	E	D	
8. Prehospital care providers collect patient care and administrative data for each episode of care and have a mechanism to evaluate the data with their medical director within their own agency, including monitoring trends and system performance.	E	E	

9. The trauma registry, non-trauma center ED, prehospital, rehabilitation, and other databases are linked or combined to create a trauma system registry. (I-301.3)	E	E	
10. The lead agency has available for use the latest in computer technology advances and analytic tools for monitoring injury prevention and control components of the trauma system. There is reporting on the outcome of implemented strategies for injury prevention and control programs within the trauma system. (1-301.4)	E	E	
Research			
1. The TMIS is used to facilitate ongoing assessment and assurance of system performance and outcomes and provides a basis for continuously improving the trauma system, including a cost-benefit analysis. (B-301)	E	E	
2. The lead agency has available for use the latest in computer technology advances and analytic tools for monitoring injury prevention and control components of the trauma system. There is reporting on the outcome of implemented strategies for injury prevention and control programs within the trauma system. (I-301.4)	E	E	
3. The lead agency ensures that the trauma system demonstrates prevention and medical outreach activities within its defined service area. (B-306)	E	E	
4. The trauma system has developed mechanisms to engage the general medical community and other system participants in their research findings and performance efforts. (I-306.1)	E	E	
5. The effect or impact of outreach programs (medical community training/support and prevention activities) is evaluated as part of a system performance improvement process.	E	E	
6. To maintain its state, regional, or local designation, each hospital/EMS will continually work to improve the trauma care as measured by patient outcomes. (B-307)	E	E	
7. The trauma system implements and regularly reviews a standardized report on patient care outcomes as measured against national norms.	E	E	