

**OHIO STATE BOARD OF EMERGENCY MEDICAL SERVICES
TRAUMA COMMITTEE**

**A FRAMEWORK FOR IMPROVING
OHIO'S TRAUMA SYSTEM**



Final Version
Approved by Ohio State Board of EMS
October 20, 2010

Purpose of the Document

This document is intended to serve as a reference for planning in regards to Ohio's statewide trauma system. Public, governmental and healthcare stakeholders should view this document as a guideline to ameliorate gaps that exist in the current trauma system. The work described in this document is not an attempt to undo any of the trauma system components created by House Bill 138 (123rd General Assembly).

Table of Contents

<u>Section</u>	<u>Pages</u>
Acknowledgements.....	4-5
Ohio Trauma System Vision and Values.....	6-7
Trauma System Introduction.....	8-9
Ohio Trauma Facts and System Accomplishments.....	10
Ohio’s Trauma System Assessment	11-12
Trauma System Plan.....	14-35
Goal 1: Leadership.....	14
Goal 2: Injury Prevention.....	18
Goal 3: Emergency/Disaster Preparedness Plan.....	20
Goal 4: Prehospital Care.....	22
Goal 5: Definitive Care – Acute Care Hospitals and Trauma Centers.....	24
Goal 6: Definitive Care – Rehabilitation.....	26
Goal 7: Evaluation, Quality Management & Performance Improvement.....	28
Goal 8: Trauma System Registry Infrastructure.....	29
Goal 9: Professional Education and Public Information.....	31
Goal 10: People With Functional Needs.....	33
Glossary.....	36-43
Appendix A.....	44

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A complete list of participants in the March 12, 2008 trauma system assessment can be found in Appendix A.

OHIO TRAUMA SYSTEM VISION AND VALUES

Vision

The vision for the Ohio trauma system is a statewide system of high quality, cost effective trauma care for all adult and pediatric residents and visitors in the state. The system targets the prevention of unnecessary death and disability and improves the delivery of medical services throughout the trauma care continuum. To assure this capability, an inclusive statewide network exists that encompasses prehospital agencies, state-designated trauma centers and acute care facilities. The system is formally organized, integrated, and includes the elements of a comprehensive system including injury prevention and control; public information and education; trauma data systems and research; prehospital services including patient care resources; hospital patient care resources including medical rehabilitation; and ongoing system evaluation and improvement processes. The system of care is statewide in design, and state- and regionally-implemented. The system is led and monitored by the Lead Trauma Agency (LTA) which collaborates with all appropriate stakeholders to accomplish the goals of the trauma system. The system's participants and the LTA are accountable to each other.

Values

Ongoing stakeholder involvement from across the health care continuum, the general public and regional trauma systems is paramount to the success of a comprehensive state trauma system.

Problem Statement

As of 2010, Ohio has components of an effective trauma system but lacks a comprehensive system plan that ensures optimal care for injured patients. The current state trauma system is deficient in key aspects consistent with effective public health models. These aspects include:

- Clear oversight
- Accountability among system participants
- Ongoing assessment of risk-factors and gaps
- Universal (statewide) and consistent provision of care/services to victims
- Evaluation & regulation of existing services
- Reassessment

Goal

The overall goal of the Ohio trauma system is to deliver high quality, cost-effective care to trauma patients. The state trauma system shall encompass state and regional coordination of a formal, organized and inclusive network of trauma care providers in order to:

- Provide leadership and direction for system development, ongoing evaluation, and improvement;
- Prevent unnecessary death and disability; improve and enhance the delivery of trauma services to residents and visitors in Ohio;
- Pursue funding mechanisms for trauma system implementation and maintenance;
- Pursue public awareness and prevention activities to decrease the incidence of injury;
- Develop consistent, relevant and accessible trauma education resources statewide;
- Design an integrated system of care from event recognition to full patient recovery, including medical rehabilitation;
- Improve and enhance the delivery of prehospital EMS and hospital trauma services to residents and visitors in Ohio;
- Establish standards for Ohio trauma system participation and mechanisms to ensure continuing compliance with system standards;
- Coordinate the trauma system with surrounding states;
- Assure accountability, objectivity, and relevance of the trauma system through integrated systems, data and quality management processes;
- Develop a system for trauma related evidence-based research;
- Ensure that special needs and high-risk populations are identified and their specific needs accommodated;
- Ensure integration of the trauma system plan with the state disaster plan;
- Assess educational needs of the constituents of the trauma system assuring there is a cohesive educational plan that addresses the needs of stakeholders, care providers and the public.

TRAUMA SYSTEM INTRODUCTION

What does a trauma system mean to the public?

For severely injured patients, the trauma system engages participants to get to the “right hospital, in the right manner, in the right amount of time.” These three factors optimize chances for trauma patient survival while minimizing chances for severe disabilities and death. Trauma is *the* leading cause of death for persons between the ages of 1 and 44 years of age and is a leading cause of death and disability among all age groups.

Multiple research studies and experience in other state trauma systems have demonstrated a person’s chances of dying or suffering a severe, lifelong disability are reduced if they are injured in a state with an organized trauma system.

History of trauma system development

The development of comprehensive emergency care systems for the ill and injured began in the United States over forty years ago. Ohio’s trauma system development has been ongoing for over three decades. An initial focus on the development of prehospital emergency service capacity has evolved to a view that encompasses comprehensive and integrated emergency medical services (EMS) and trauma systems. Key national and state development events include the following.

- In 1966, the National Academy of Science’s “White Paper” titled *Accidental Death and Disability: The Neglected Disease of Modern Society* identified the need for a system of trauma care including prehospital and hospital care.
- In 1973, the *National Emergency Medical Services Act* (PL 93-154) was enacted to stimulate the development of EMS systems. Fifteen system elements were identified as essential elements of an EMS system.
- The *National Trauma Care Systems Planning and Development Act* of 1990 (PL 101-590) encouraged state governments to develop, implement and improve trauma systems. States were charged with developing a trauma care plan delivered via a system approach. As of 2010, over 40 states have components of a statewide trauma system.
- Ohio’s EMS development can be traced to 1969 when the Heartmobile was pioneered. This vehicle was the first in the U.S. specifically designed as a mobile coronary care unit. The Heartmobile helped initiate the beginnings of advanced prehospital care across the nation.
- In the 1980’s, Ohio hospitals were included in a voluntary, loosely coordinated trauma system: larger urban hospitals self-identified themselves as regional trauma centers. There was no formal verification of trauma care among hospitals.
- In 1990, the National Highway Traffic Safety Administration (NHTSA) was invited to conduct a review of the Ohio EMS system and developed recommendations for future state system development that included trauma care.
- In 1992, the Division of Emergency Medical Services was established within the Ohio Department of Public Safety, and the State Board of Emergency Medical Services was

created by the passage of Senate Bill 98, to improve comprehensive development and implementation of prehospital systems of care.

- In 1999, the Ohio Trauma Registry was established within the Division of Emergency Medical Services. Hospitals caring for injured patients who meet defined inclusion criteria are required to submit data to the Ohio Trauma Registry.
- In July 2000, a bill introduced in the House of Representatives (HB 138, 123rd General Assembly) was signed into law by Governor Taft. This established a legally mandated statewide trauma system, created a statewide trauma committee called the Ohio Trauma Committee, defined “trauma victim,” and set official verification standards for trauma centers. The Ohio Trauma Committee was charged with assisting the State Board of Emergency Medical Services in developing rules and guidelines on a variety of trauma system elements including prehospital triage of victims to trauma centers; restrictions on admission of trauma patients by non-trauma centers’ physicians; and oversight of EMS quality of care and provider education.
- In addition to establishing the state trauma system, HB 138 created two commissions to study injury prevention and post-critical trauma care. It also mandated seven special studies to examine trauma care in the state as it existed at that time.
- From 2000-2002, the Ohio Trauma Committee developed recommendations for field triage to trauma centers and trauma registry risk adjustment. These recommendations were promulgated as rules in the Ohio Administrative Code by the State EMS Board.
- In 2002, the Director of the Department of Health directed a workgroup to focus on recommendations for the creation of a trauma center designating authority in Ohio. A provisional trauma center designation process was implemented.
- In 2005, a trauma rehabilitation registry was established with the Division of Emergency Medical Services as a module of the Ohio Trauma Registry. This registry was the first of its kind in the nation and was developed to track and understand longer-term outcomes of trauma victims.
- In 2007, the Ohio Department of Health convened the Ohio Injury Prevention Partnership (OIPP) with funding from the Centers for Disease Control and Prevention. The OIPP is a statewide group of professionals representing a broad range of agencies and organizations concerned with building Ohio’s capacity to address the prevention of injury.
- In 2008, the Ohio Trauma Committee conducted a wide-ranging assessment of the statewide trauma system in order to more effectively carry out its legislative mandate of advising and assisting the State Emergency Medical Services Board in matters related to trauma care. The Model Trauma System Planning and Evaluation document created by the federal government was used as the method for conducting this assessment.
- In 2009, a workgroup was formed by the Ohio Trauma Committee to develop a strategic plan for Ohio’s trauma system based on the results of the system assessment. The workgroup first met in February, 2009.
- In May 2009, a stakeholder meeting was held to evaluate the state trauma system and serve as the foundation for the remainder of this document. Details of the process are described in the subsequent section, *Ohio’s Trauma System Assessment*.

OHIO TRAUMA FACTS AND SYSTEM ACCOMPLISHMENT

(AS OF JULY 2010)

- Ohio has forty-three verified trauma centers as of July 2010. These include seventeen Level III trauma centers, twelve Level II trauma centers, and fourteen Level I centers. Six of the Level I and II trauma centers are pediatric-specific.
- The state has statewide trauma triage protocols that require EMS providers to transport severely injured patients directly to verified trauma centers. Certain conditions allow transports to non-trauma centers at the discretion of EMS providers. Variants to these trauma triage protocols have been created to adjust for regional differences.
- Acute care hospitals are required to have protocols that address the emergency care of trauma patients and their appropriate transfer to a trauma center. Trauma centers have transfer agreements with acute care facilities to ensure continuity of care and appropriate trauma patient transfers.
- Some EMS agencies have begun trauma performance improvement (PI) and peer review activities in order to continuously improve trauma care in the prehospital setting. There is no external oversight for EMS agencies' PI activities.
- Continuing education standards for EMS providers have been updated to place more emphasis on the educational needs for trauma care. With every certification renewal cycle, emergency medical technicians at the basic, intermediate and paramedic levels in the state are required to have eight hours of documented trauma education including the State of Ohio's trauma triage criteria.
- The seven special studies required by HB 138 are complete. These reports are available at <http://ems.ohio.gov>.
- The EMS and Trauma Grants program that had been funding EMS training and equipment since the early 1990's has expanded to include funding of trauma-related research in three areas: injury prevention, trauma rehabilitation, and trauma medical procedures. These research grants have resulted in numerous publications in peer-reviewed journals.
- Two temporary commissions set up by the Ohio Department of Health to study injury prevention and post-critical trauma care have since completed their reports. These two reports are available at <http://ems.ohio.gov> and are foundational documents for further improvements in the trauma system, specifically in areas of injury prevention and rehabilitation.
- In 2008, the Ohio Trauma Committee evaluated the special needs of the geriatric trauma patient and made recommendations to triage geriatric patients with specific indicators to trauma centers. These were incorporated in to O.A.C. 4765-14.

OHIO'S TRAUMA SYSTEM ASSESSMENT

Summary of Work

On March 12, 2008, the Ohio Trauma Committee convened to assess Ohio's statewide trauma system. A general assessment was conducted on the system's current strengths and weaknesses, as well as potential opportunities and threats to future development. The Committee reviewed the *Model Trauma Systems Planning and Evaluation* document (MTSPE) created by the Health Resources and Services Administration of the U.S. Department of Health and Human Services. The MTSPE contains 113 indicators by which a state trauma system may be evaluated. The MTSPE has been used by twenty-five other states and many regions within states to evaluate their trauma systems. It was adopted by the American College of Surgeons' Committee on Trauma (ACS-COT) as a tool for assessing trauma systems. (The ACS is the verifying body for Ohio's trauma centers.) The Ohio Trauma Committee made the decision to utilize the MTSPE to assess Ohio's trauma system. The eventual goal was to produce a comprehensive guidance document for further development of Ohio's trauma system in order to advance the care of trauma victims.

In November 2007, at the request of the Ohio Trauma Committee, the Ohio Society of Trauma Nurse Leaders (OSTNL) met to design an assessment process for Ohio utilizing the MTSPE. The OSTNL developed a template that evaluated Ohio's current trauma system against the MTSPE. This served as the foundation for a multi-stakeholder assessment using the MTSPE, which was conducted in a day-long retreat with the Ohio Trauma Committee and OSTNL. Other participating stakeholders included members from the Ohio COT, the Ohio Department of Health, the Ohio Emergency Management Agency, and the Ohio Hospital Association. Scoring on the MTSPE was accomplished by consensus of the stakeholders present at the retreat.

Over the next several months, the MTSPE assessment was a major agenda item for work at bimonthly meetings of the Ohio Trauma Committee. This work was completed by multiple stakeholders from a variety of agencies and involved a step-by-step process that provided the following:

- An evaluation of the implications of the scores for each section against the individual indicators of the MTSPE
- Categorization of each indicator by importance or priority
- Ranked relative ease of accomplishment
- Ranked anticipated cost

An additional outcome of this phase of the assessment was the recognition that a significant amount of dedicated work would be required to reach the project goal of producing a comprehensive guidance document that would drive specific aspects of improving the trauma system, both in the near-term and longer-term future. To address the amount of work required, the OSTNL took the lead on reviewing the assessment information and organized it according to MTSPE sections. This document was provided to the Ohio Trauma Committee as a recommended template for a future stakeholder meeting.

The next step for the Ohio Trauma Committee was the development of a dedicated steering subcommittee. The steering committee was comprised of volunteers from the Ohio Trauma Committee and included various professional backgrounds: physicians, nurses, hospital

executives, and others representing different constituencies of the Ohio Trauma Committee. This group, along with occasional invited guests, met on a bi-monthly basis, starting in January 2009. In addition, at several points, input was solicited for specific sections of the assessment and plan from other stakeholders within the state.

With the specific goal of this subcommittee being the development of a written Trauma System Plan for Ohio, an additional directive by the Ohio Trauma Committee was to review other states' trauma system plans known to be developmentally advanced relative to Ohio. This research was used to draft an outline of an Ohio Trauma System Plan by the subcommittee. The intent was to integrate the MTSPE indicators with functional components of a trauma system.

The result of this work is a document divided into eight major goals. Each goal lists the current and desired status of that goal's subject matter. Within the plan of action specific MTSPE indications are identified according to priority. Each indicator is associated with timeframes, leadership, partners, and funding to be determined by the work group during finalization. Each strategy has a measure of success to ensure appropriate outcomes are reached. The major goals are identified below.

- Goal 1: Leadership
- Goal 2: Injury Prevention
- Goal 3: Emergency/Disaster Preparedness Plan
- Goal 4: Prehospital Care
- Goal 5: Definitive Care – Acute Care Hospitals and Trauma Centers
- Goal 6: Definitive Care – Rehabilitation
- Goal 7: Evaluation, Quality Management & Performance Improvement
- Goal 8: Trauma System Registry Infrastructure
- Goal 9: Professional Education and Public Information
- Goal 10: People with Functional Needs

This Trauma System Plan for Ohio has been reviewed and approved by the membership of the Ohio Trauma Committee. The utility of this document is that it summarizes the information available from a wide range of topic experts across the State of Ohio. It explicitly defines overarching goals that have been identified nationally as key to the development of a robust and responsive trauma system. It incorporates a ranking system that allows the opportunity for leaders and policy makers to strategically plan for development and implementation of the various goals. Additionally, it is constructed to provide a resource to the experts and leadership in the various organizations and agencies across the state responsible for each goal area. It is intentionally non-prescriptive to avoid constraining innovation and development within current programs.

TRAUMA SYSTEM PLAN

Key components of an integrated state trauma system are described as the following goals.

Goal 1: Leadership – Have a viable, active state lead agency with authority, responsibility and resources to plan, implement and evaluate an inclusive trauma system for Ohio.

Goal 2: Injury Prevention – Have a state trauma system that is an active partner in a state-coordinated system for the reduction of injury-related morbidity and mortality.

Goal 3: Emergency/Disaster Preparedness – Have a trauma system prepared to respond to emergency and disaster situations in coordination with state disaster plans.

Goal 4: Prehospital Care – Evaluate and maintain guidelines specific to the transport of trauma patients that result in timely and safe delivery to trauma care.

Goal 5: Definitive Care – Acute Care Hospitals and Trauma Centers – Establish a statewide network of trauma centers that meets minimum state standards for operation and provision of quality trauma care in coordination with all other trauma system participants.

Goal 6: Definitive Care – Rehabilitation – Establish rehabilitation centers as active participants in Ohio’s trauma system resulting in coordinated post-acute care for trauma victims.

Goal 7: Evaluation, Quality Management & Performance Improvement – Establish statewide and regional system evaluation, quality management, and performance improvement process.

Goal 8: Trauma System Registry Infrastructure – Evaluate and maintain an accurate and accessible injury data system, including a trauma registry, to support trauma system evaluation, performance improvement, public health planning, injury prevention, and outcomes research.

Goal 9: Professional Education and Public Information – Integrate trauma education and public information into all aspects of the trauma system.

Goal 10: People with Functional Needs – Ensure that special needs and high-risk populations are identified and their specific needs accommodated.

Goal 1: Leadership

Have a viable, active state lead agency with authority, responsibility, resources and funding to plan, implement and evaluate an inclusive trauma system for Ohio.

Current status: The Ohio Trauma Committee serves as an advisory committee to the EMS Board with legislative mandate limited to the establishment of triage guidelines. Trauma centers must be verified by the American College of Surgeons to function as a trauma center. The State has no enforcement authority. State designation support services are not comprehensive.

Desired status: Legislative authority (statute and regulations) exists to identify the Lead Trauma Agency (LTA) and its organizational structure. The LTA plans, develops, implements, manages, evaluates and administers the funding of the trauma system and its component parts. The LTA works through all appropriate stakeholders to accomplish the goals of the trauma system. The LTA informs and educates state, regional, county and local constituencies and policy makers to foster collaboration and cooperation for system enhancement and injury control.

Plan of action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
1.1: An external assessment is conducted on the state-wide trauma system. (MTSP indicator 103.4)	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● Written document with specific recommendations on system development.
1.2: A formal assessment of the needs of the various constituencies (i.e. media, public officials, general public, insurance providers, medical community) of the trauma system has been completed. (MTSP indicator 105.2 – 105.7)					<ul style="list-style-type: none"> ● Plans have been developed to meet these specific needs. ● An effective communication plan for each constituent group is operationalized. (MTSP indicator 207.1, 207.2, 207.4) ● Publish and distribute a Trauma Annual Report. (MTSP indicator 304.1)
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STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>1.3: Legislative authority (statute and regulations) exists to identify the Lead Trauma Agency (LTA) and its organizational structure. The LTA plans, develops implements, manages, and evaluates the trauma system and its component parts. (MTSP indicator 201.1)</p>					<p>Legislative authority exists.</p> <ul style="list-style-type: none"> ● LTA is established with a defined organizational structure. (MTSP indicator 202.1, 202.3) ● There is a state-wide Trauma Medical Director with a written job description and whose specific legal authorities and responsibilities are formally granted by law or by administrative rule. (MTSP indicator 310.13) ● There is a state-wide EMS system medical director with a written job description and whose specific legal authorities and responsibilities are formally granted by law or by administrative rule. (MTSP indicator 302.3) ● Operational policies and procedures and trauma system performance standards are in place. (MTSP indicator 201.3, 201.4) <p>Compliance is actively monitored.</p>
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>1.4: Based on needs assessment, a trauma system plan has been adopted:</p> <p>1.4.1: Match resource allocation to need. (MTSP indicator 303.2, 303.5)</p> <p>1.4.2: Integrate various state and regional components of the trauma system (i.e. EMS, trauma centers, hospitals, emergency preparedness, rehabilitation) into regional trauma systems that have formal relationships. (MTSP indicator 303.2)</p> <p>1.4.3: Identify and manage personnel and equipment</p> <p>1.4.5: Identify and manage financial resources and operational budgets to support and coordinate state and regional plans.</p> <p>1.4.6: Develop an enhanced state-wide 9-1-1 system. (MTSP indicators 203.1 – 203.4; 203.7; 204.1-204.2; 204.4-204.5, 302.7)</p>					<ul style="list-style-type: none"> ● A trauma system plan has been adopted and developed with multi-agency groups and endorsed by those agencies that address our strategies.
<p>1.5: LTA, in cooperation with various licensing and certifying boards / agencies, conducts regular operational assessment of all components of the trauma system to ensure compliance with laws, rules and regulation, clinical care protocols and other responsibilities as identified in the trauma plan. (MTSP indicators 310.5, 310.5, 310.8, 311.1 – 311.3, 311.5, 311.6)</p>					<ul style="list-style-type: none"> ● A mechanism exists to evaluate individual and institutional trauma care services across the entire trauma care system through performance improvement. ● All individuals and institutions receive a report regarding status / compliance (some of these functions may be completed by relevant licensing agencies). ● A mechanism is in place for LTA to facilitate resolution of non-compliance /complaints in collaboration with appropriate agencies.
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>1.6: The LTA will analyze the trauma system function across all provider organizations in order to develop a geographically rational system of regional responsibility to facilitate communication, administration, coordination and improvement of care. (MTSP indicators 103.1, 105.2-105.7, 207.1)</p>					<ul style="list-style-type: none"> ● All counties are included in a well organized regional trauma system by a timeframe determined by the LTA.
<p>1.7: The LTA administers the funds necessary to operate the state trauma system</p>					<ul style="list-style-type: none"> ● LTA resources match system needs ● System resources match population needs ● Hospital resources meet patient needs

Goal 2: Injury Prevention

Active partnership between the state trauma and injury prevention systems focusing on the reduction of injury morbidity and mortality.

Current Status: Injury prevention programs exist at the state, regional, county, and local levels, as well as at all trauma centers. These programs have a forum to meet through the Ohio Injury Prevention Partnership (OIPP). Voluntary, state-level injury prevention and control plans focused on high priority injuries are being developed. Monitoring of program outcomes and injury prevention effectiveness occurs only sporadically by local injury prevention programs. Local programs are not guided by a strategic state plan. Coordination of injury prevention programs with the state trauma system is limited.

Desired Status: The written injury prevention and control plan is fully developed and coordinated with interested agencies and community health programs. State, regional, county and local level injury plans are data driven with a focus on high priority injuries. Specific goals with measurable objectives are incorporated into the injury plan. Trauma system and injury prevention leaders regularly inform and educate policy makers on trauma system development and injury prevention. Injury coalitions and trauma-specific statewide multidisciplinary, multi-agency advisory committees are integrated and work collaboratively to inform the community and to educate community leaders. The trauma system participants have been trained in the use of effective injury prevention strategies and analytical tools. These tools are used routinely to monitor and report on the outcome of implemented strategies and on the effectiveness of injury prevention and control programs within the trauma system. A process is in place to facilitate access to data for evaluation and research.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
2.1: The development of statewide injury prevention plans on high priority injuries. (MTSP Indicators 101.6 & 203.5) (OIPP Infrastructure Goal #2)	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● Injury plans are data driven with a focus on evidence-based programs. Specific goals with measurable objectives constitute the plans. Stakeholders will participate in the implementation and evaluation of the plan.
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>2.2: The trauma system and public health system have established linkages with an emphasis on population-based public health programs, surveillance and evaluation of acute and chronic traumatic injury and primary and secondary injury prevention programs. (MTSP Indicators 101.4 & 101.6, 208.1) (OIPP Infrastructure Goal #5)</p>					<ul style="list-style-type: none"> ● Sharing of data between systems exists at regularly scheduled intervals as deemed appropriate by participating groups. (MTSP Indicator 208.1)
<p>2.3: Evidence-based injury prevention strategies are utilized at the state, regional, county and local trauma system levels. (MTSP Indicator 306.2) (OIPP Infrastructure Goal #4)</p>					<ul style="list-style-type: none"> ● The trauma system is an active participant in community activities, evidence-based injury prevention and control programs and the evaluation of program effectiveness. ● Evidence-based injury prevention resources are distributed.
<p>2.4: Increase the knowledge and skills (capacity) of injury prevention personnel. (OIPP Infrastructure Goal #4)</p>					<ul style="list-style-type: none"> ● Injury prevention training is developed with incorporation throughout the state.
<p>2.5: Support public health policies designed to advance injury and violence prevention in Ohio. (OIPP Infrastructure Goal #2)</p>					<ul style="list-style-type: none"> ● Position statements developed for injury prevention policies are available and utilized.
<p>2.6: Injury prevention programs use trauma data to develop intervention strategies. (MTSP Indicator 205.4) (OIPP Infrastructure Goal #1)</p>					<ul style="list-style-type: none"> ● Trauma reports on the status of injury and injury mechanisms are easily accessible and routinely available to injury prevention personnel. Trauma data is routinely used to align injury prevention programs to target the greatest need. ● Existing databases (death, risk factor, fatality review, hospital, EMS, trauma, child maltreatment, crime, traffic crash, poison control, brain injury, etc) are compiled, assessed for quality and linked (208.1).

Goal 3: Emergency/Disaster Preparedness

The trauma system is well-integrated into state, regional county and local disaster plans. The trauma system is prepared to respond to emergency and disaster situations in coordination with state, regional, county and local disaster plans.

Current Status: The Ohio Emergency Management Agency (EMA), all county EMAs, local EMAs, and many facilities have plans and procedures in place for all-hazards incidents. These plans are not integrated with the state trauma system and do not address the roles and responsibilities of trauma centers in a disaster situation. Current drills and exercises do not test the trauma system.

Desired Status: . The emergency management and trauma systems are well-integrated, and operational procedures have been implemented, tested, and evaluated for disaster operations. System participants meet regularly and are familiar with the operational plans of both areas, and data from the trauma system and from the emergency management system are shared. Roles and resources of trauma centers and acute care hospitals during disaster events are well-defined and incorporated into state, regional, county and local plans.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>3.1: Create plans to ensure the EMS, trauma and the all-hazards medical response systems are integrated and operational within existing individual, county, regional and statewide disaster plans. (MTSP indicator 305.1)</p>	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> • All-hazards exercises and simulated incident drills have the cooperation and participation of the trauma system or trauma centers at the local, regional and state levels. • Interactions of the lead trauma agency and emergency management agencies are addressed. Close coordination with clearly defined roles, goals and objectives are included in plans. (MTSPE Indicator 203.6) • The trauma system is actively involved in the support of ESF-8
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>3.2: All-hazards exercises routinely include trauma-producing events (natural, unintentional and intentional) that test the capabilities of the trauma system. (MTSP Indicator 305.2, 208.2)</p>					<p>Exercises and training in all-hazards responses which test and evaluate trauma center, acute care hospital, and trauma system surge capacity are conducted regularly.</p> <ul style="list-style-type: none"> • Roles of trauma centers and non-centers during a disaster events are well defined and incorporated into the regional/local plan.
<p>3.3: The lead trauma agency has access to additional materiel and personnel for large-scale traumatic events. (MTSPE indicator 305.3)</p>					<ul style="list-style-type: none"> • The lead trauma agency has worked with national, state, regional, county and local agencies to create caches of equipment and materials for use in prehospital and hospital care in large-scale traumatic events. Plans for utilizing additional personnel in these events are also in place. • Caches of supplies, equipment and pharmaceuticals are available to trauma centers and acute care hospitals when needed.

Goal 4: Prehospital Care

Evaluate and maintain guidelines specific to the transport of trauma patients that result in timely and safe delivery to trauma care.

Current status: The emergency medical system exists within the state of Ohio with regional variability. A well-established EMS Board exists with authority over licensure for emergency medical services and fire personnel, protocol development, prehospital triage criteria, and other priorities. There is an identified State EMS Medical Director, Regional Physician Advisory Boards, and trauma-specific triage and transport guidelines. There is trauma-specific prehospital education. There are highly variable regional linkages between EMS and trauma systems. There is no state trauma system medical director actively involved with the development, implementation, and evaluation of protocols. There is no organized trauma EMS performance improvement process at the state level.

Desired status: The trauma system is supported by the EMS system that includes communication, medical oversight, prehospital triage and transportation. The trauma system, EMS system and public health agencies are well integrated with a sophisticated trauma / EMS performance improvement system. There is a designated state trauma medical director.

Plan of action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>4.1: There is a well-defined trauma system with medical oversight integrating the specialty needs of the trauma system with the medical oversight for the overall EMS system. (MTSP indicator 302.1)</p>	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> • Formal, written procedure exists delineating the responsibilities and relationship of the state trauma medical director and the state EMS medical director. • In cooperation with the prehospital certification and licensure authority, guidelines exist for prehospital personnel for initial and ongoing trauma education and training; including trauma-specific courses and those courses that are readily available throughout the State. (MTSP indicator 310.1)
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>4.2: The trauma system medical director is actively involved with the development, implementation, and ongoing evaluation of EMS system protocols to ensure they are congruent with the trauma system design. (MTSP indicator 302.4)</p>					<ul style="list-style-type: none"> ● Development of EMS / Trauma system protocols, with clear collaboration between the trauma system medical director and the state EMS medical director, with protocols congruent with the trauma system plan. ● Local, regional and state medical oversight exists. Effective performance improvement process of the EMS system for trauma triage, communications, treatment, and transport is in place. (MTSP indicator 302.5) ● Sufficient and well-coordinated transportation resources exist to ensure EMS providers arrive at the scene promptly and expeditiously transport the patient to the correct hospital by the correct transportation mode. (MTSP indicator 302.8)
<p>4.3: There is clearly defined, cooperative, and ongoing relationship between the hospital trauma medical directors and local / regional EMS directors (MTSP indicator 302.2).</p>					<ul style="list-style-type: none"> ● A formal organizational structure exists at the local and regional level, supporting the collaboration and medical oversight of trauma triage, education, communication, treatment and transport.

Goal 5: Definitive Care – Acute Care

Establish a statewide and regional network of trauma care to include trauma centers and acute care facilities. These would meet minimum state standards for operation and provision of quality trauma care in coordination with all other trauma system participants.

Current Status: There are a large number of trauma centers, verified by the ACS or operating under provisional designation, in the state. Trauma center status is voluntary and no authority exists to control the placement of trauma centers. Coordination among trauma centers and between trauma centers and non-trauma centers is not standardized and non-systematized. Physicians at non-trauma center hospitals are prohibited from admitting trauma victims as defined by the Ohio Revised Code. Secondary triage of trauma victims is facility determined and there is no mandatory review of the criteria. There is no regulatory oversight of trauma care in trauma centers or in non-trauma centers and performance improvement is not mandated. Some voluntary, cooperative regionalization of care occurs in the state.

Desired Status: Acute care facilities, regardless of trauma designation, are integrated into a resource-efficient, inclusive network that meets required standards and provides optimal care for all injured patients. There are clearly defined roles and responsibilities of all acute care facilities treating trauma and facilities that provide care to specialty care populations. A network of comprehensive regional trauma systems exists.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>5.1: Assure an inclusive trauma network which recognizes the contribution of all acute care hospitals in the treatment of the trauma victim.</p> <p>5.2: Trauma center development is encouraged and enabled in resource poor regions.</p>	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● Continued verification of Ohio trauma centers. ● Written and approved process exists for non-trauma center designation.
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>5.4: There is a procedure for communications among medical facilities when arranging for interfacility transfers including contingencies for radio or telephone system failure. (MTSPE Indicator 302.9)</p>					<ul style="list-style-type: none"> ● All hospitals, trauma centers and acute care hospitals provide standardized care in the first 30 minutes after patient arrival. ● Development of a standardized reporting form with regional reporting and monitoring. ● Regional performance improvement process exists that involves all hospitals within a regional system. ● Bi-directional, closed loop communication exists regarding follow up to transferring facilities in regards to patient care and outcome.
<p>5.5: When injured patients arrive at a medical facility that cannot provide the appropriate level of definitive care, there is an organized and regularly monitored system to ensure the patients are expeditiously transferred to the appropriate, system-defined trauma facility.</p>					<ul style="list-style-type: none"> ● An organized system of monitoring inter-facility transfers exists within the trauma system (MTSPE Indicator 303.4).
<p>5.6: Assess and ensure that injury trauma and severity are matched to resources available for timeliness and quality of care.</p>					<ul style="list-style-type: none"> ● Over- and under-triage reaches acceptable levels in standardized statewide methodology across the state. ● Statewide feedback mechanism for correction of over- and under-triage is established and functional. (MTSPE Indicator 303.1)
<p>5.7: Set appropriate education standards for physicians and nurses who routinely participate in trauma care.</p>					<ul style="list-style-type: none"> ● Baseline standards of education for nurses and physicians exist across the state. ● A statewide performance improvement process to monitor the achievement of the education standards exists. (MTSPE Indicator 310.3 through 310.7)

Goal 6: Definitive Care – Rehabilitation

Establish rehabilitation centers as active participants in Ohio’s trauma system resulting in coordinated post-acute care for trauma victims.

Current status: Rehabilitation is available to most trauma patients. Trauma centers work with rehabilitation programs on an individual, non-standardized basis without a systematized approach. Some in-patient rehabilitation data is submitted to the Ohio Trauma Registry, but outpatient data is not. The data has not been validated, nor is it routinely used in system evaluation reports.

Desired status: A well-integrated program of rehabilitation is available for all trauma patients. Rehabilitation programs are included in the trauma system plan, and trauma centers work closely with rehabilitation centers and services to ensure quality outcomes for trauma patients. The trauma plan integrates rehabilitation centers and outpatient rehabilitation services. Trauma centers integrate rehabilitation care early in the patient’s treatment plan. Rehabilitation data, including final disposition, functional outcome, and rehabilitation costs, are collected. These data are routinely submitted to trauma centers and to the Ohio Trauma Registry for inclusion in system evaluation reports. Rehabilitation personnel are fully integrated into trauma system performance improvement processes.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>6.1: Establish leadership for rehabilitation services within the inclusive trauma system. (MTSP Indicator 308.1)</p> <p>6.2: Review, revise, and implement the recommendations of the 2003 Post Critical Trauma Commission Report.</p> <p>6.3: Maintain standard of care and ensure continual improvement of rehabilitation services.</p>	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● A rehabilitation oversight body is present, meeting at least twice a year, by end of year 2. ● Rehabilitation services in the state are congruent with the needs of the trauma victims. Specific measurements to be defined. ● OTR-Rehabilitation data is used to evaluate post-traumatic rehabilitation care and patient outcomes. ● Formal written transfer agreement between all trauma centers and inpatient rehabilitation facilities.
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>6.4: Rehabilitation centers and outpatient rehabilitation services provide quality data on trauma patients (MTSP Indicator 308.2).</p> <p>6.5: Rehabilitation oversight body to define and oversee the rehabilitation database.</p> <p>6.6: Development of a comprehensive rehabilitation database that is integrated within the Ohio Trauma System Registry.</p>					<ul style="list-style-type: none"> ● Oversight body defines the staging of facilities that care for a post-injury rehabilitation patient who will be reporting data. ● Ohio trauma rehabilitation data is used to evaluate post-traumatic rehabilitation care and patient outcomes with an annual report submitted to the LTA.

Goal 7: Evaluation, Quality Management & Performance Improvement

Establish statewide and regional system evaluation, quality management, and performance improvement process throughout the continuum of care.

Current status: Reports on varying aspects of injury prevention and clinical care are created in isolation at state, regional and local levels. These are not integrated at any level. Analysis is fragmented, uncoordinated and largely unshared with other stakeholders.

Desired status: Processes exist to evaluate the performance of all aspects of the trauma system. These include analysis of the outcomes of population-based injury prevention services; access to and availability of services, with emphasis on special populations; quality of services across the full spectrum of trauma care providers; and outcomes of care. Evidence-based performance improvement indicators exist and performance goals have been set. Detailed feedback on quality and performance is provided to pertinent stakeholders, including the LTA. Overall assessments of the trauma system are provided to the public and the media.

Plan of action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>7.1: Establish a performance improvement body which is multidisciplinary in nature and oversees all aspects of the trauma system's quality and performance.</p>	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● Regular meetings, analysis of data and reports are created providing feedback to all trauma system components. ● System performance outcome goals have been created based on the baseline analyses which are time-specific, quantifiable and measurable. (MTSPE Indicators 202.4, 306.1, 306.3, 307.2, 309.4, 310.11, 310.12) ● Inventory and a gap analysis are completed and reported to stakeholders and the public (MTSPE Indicators 103.2). ● Trauma data reports are generated and are disseminated to system leaders and stakeholders to evaluate and improve system performance effectiveness. (MTSPE Indicator 105.1) ● Develop process of integrating outcome of trauma-related research into clinical care and trauma system refinement improvement.

Goal 8: Trauma System Registry Infrastructure

Evaluate and maintain an accurate and accessible trauma registry to support trauma system evaluation, performance improvement, public health planning, injury prevention, and outcomes research.

Current Status: Injury data is collected from EMS, acute care hospitals, and inpatient rehabilitation facilities. Data from hospitals and rehabilitation facilities is limited to serious injuries (i.e. hospitalization greater than 48 hours). Currently, financial and death certificate/coroner’s data are not collected. There is limited data regarding emergency department and hospital discharge. Data has been linked probabilistically but relevant data (i.e., Social Security number, patient name) to make deterministic linkage is not collected. At the system level, collected data is available to support trauma system evaluation, performance improvement, public health planning, injury prevention, and outcomes research; however, the frequency of these data analyses is low. A comprehensive injury surveillance system does not exist.

Desired Status: There is a comprehensive and standardized trauma management information system. The trauma system registry will include all aspects of care: prehospital, acute care, rehabilitation, coroner, financial. All data systems are deterministically and probabilistically linked. There is a process in place to evaluate and ensure the quality, timeliness, completeness, and confidentiality of the data. The trauma system registry will be made widely available for research, injury surveillance and system performance assessment. Data is provided to outside sources in an aggregate and de-identified format and is consistent with confidentiality requirements.

Plan of action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
8.1: Develop a comprehensive, standardized trauma system registry.	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> ● System has the ability to compare injury mortality. (MTSPE Indicator 101.3) ● System has the ability to describe the epidemiology of injury. (MTSPE Indicator 101.1) ● All databases are probabilistically and deterministically linked. (MTSPE Indicator 102.3)
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>8.2: Develop standardized, dynamic reporting tools to allow individuals to access specific views and information.</p>					<ul style="list-style-type: none"> ● Existence of a web-based reporting system allows monitoring of injury data by the full scope of injury stakeholders. (MTSPE Indicator 102.2, 301.4, 304.2)
<p>8.3: Develop rules and regulations that ensure quality, timeliness, completeness and confidentiality of data.</p>					<ul style="list-style-type: none"> ● Policies and procedures exist that ensure quality trauma data is readily available. (MTSPE Indicator 102.4)
<p>8.4: Establish a method of collecting trauma financial data from a variety of sources.</p>					<ul style="list-style-type: none"> ● Financial data is used for annual strategic and budgetary planning. (MTSPE Indicator 102.5, 205.1) ● Definitions for financial trauma data are a component of the data dictionary and are reported to the trauma system registry. (MTSPE Indicator 309.1, 309.2, 309.3)

Goal 9: Professional Education and Public Information

Integrate trauma education and public information into all aspects of the trauma system.

Current Status: Trauma education requirements are not well-defined. There is no trauma educational plan for the state. Sporadic educational requirements exist. The Division of EMS mandates education to all certified prehospital personnel. There are no specific nursing and physician trauma education requirements. General public trauma information, including information generated for the stakeholders and constituents, is scattered and diffuse.

Desired Status: Professional trauma education plan exists for all care providers. There is a public information plan related to trauma. Both plans are well-defined, monitored, evaluated and revised as needed.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>9.1: Establish a public information plan.</p>	<p>TBD</p>	<p>TBD</p>	<p>TBD</p>	<p>TBD</p>	<ul style="list-style-type: none"> ● Public officials and the general public are included and involved in trauma information directives. ● An assessment of public officials, general public, and medical community on their level of understanding regarding trauma system has been conducted ● Information resources for dissemination to the general public and public officials have been developed. <p>(MTSP indicator 105.4, 105.5)</p>
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>9.2: Establish a professional trauma education plan.</p>					<ul style="list-style-type: none"> ● An educational needs assessment of the medical community (including pre-hospital, nursing, physicians and allied health) regarding trauma patient care has been conducted. (MTSP Indicator 105.6, 105.7) ● Trauma care providers will be knowledgeable on trauma care and the trauma system function. ● Information resources for dissemination to the broad medical community have been developed. (MTSPE indicator 205.5) ● Guidelines exist for prehospital, nursing, physician and allied health personnel for initial and ongoing trauma training. (MTSPE indicator 310.1, 310.2, 310.3, 310.10)

Goal 10: People with Functional Needs

Ensure that individuals with functional needs achieve the same benefits from the trauma system as the general population.

Current Status: Pediatrics and geriatrics are the only special populations which are identified in law or rule; their own triage criteria are integrated into the state’s triage rules. There are pediatric trauma centers in the largest metropolitan areas with effective catchment areas covering the entire state, but the roles and responsibilities of other acute care facilities are not formalized. Beyond triage, the needs of the geriatric population have not been addressed at the system level. No assessments have been done to identify and determine the needs of other special populations, including physical and mental disability, limited English proficiency, cultural/ethnic or rural/remote location. The Joint Commission, the accrediting body for hospitals in Ohio, mandates that hospitals have processes to address gaps in hospital care for persons with functional needs.

Desired Status: The trauma system plan addresses the needs of persons with functional needs including but not limited to those with the following circumstances:

- **Dependency status** (i.e. children of all ages and those adults with significant behavioral, cognitive and/or physical disabilities);
- **Communication barriers** to seeing, hearing and/or understanding the spoken or written word (i.e. people with illiteracy, non-English-speaking, and/or those lacking the ability to see, hear or speak);
- **Access to care barriers** (i.e. those who do not have access to public or private transportation and/or who live so remotely that they do not have access to medical care and/or injury prevention programming); and
- **Acute, chronic and/or co-morbid medical conditions** including obesity that may complicate trauma medical care.

Plan of Action:

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
10.1: Establish strategies in all previous goal categories that acknowledge the needs of persons with dependency status, communication barriers, access to care barriers, and/or acute, chronic, and co-morbid medical conditions.	TBD	TBD	TBD	TBD	<ul style="list-style-type: none"> • The Trauma System Plan addresses people’s functional needs along the trauma care continuum.
Continued...					

STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>10.1: <u>LEADERSHIP</u>: Include a representative from the Governor’s Council on People with Disabilities (or equitable organization) on the governance board of the Lead Trauma Agency.</p>					<ul style="list-style-type: none"> • Functional needs are discussed on an ongoing basis and are integrated in to future-developed aspects of the State Trauma Plan.
<p>10.2: <u>INJURY PREVENTION PROGRAMS</u>: Establish injury prevention programs targeted to persons with functional needs. The injury prevention programming should be based on trended state injury data.</p>					<ul style="list-style-type: none"> • State trauma data will demonstrate a decrease in injury rates (trended) among persons with functional needs after injury prevention programming is implemented.
<p>10.3: <u>EMERGENCY / DISASTER PREPAREDNESS PLANNING</u>: Establish plans that mitigate access-to-care barriers and promote communications for persons with functional needs in disasters.</p>					<ul style="list-style-type: none"> • Procedures to address system gaps during disasters for persons with functional needs are integrated into local, regional and state plans.
<p>10.4: <u>PREHOSPITAL CARE</u>: Establish evidence-based prehospital trauma triage protocols for persons with functional needs whose condition(s) makes field assessment by EMS more difficult. 10.4.1: Establish statewide prehospital protocols for equipment and transport that promote the safe care of pediatric and bariatric patients, as well as the EMS providers caring for them.</p>					<ul style="list-style-type: none"> • Under-triage rates of trauma patients with functional needs are comparable via state data to patients without functional needs. • Properly-sized equipment and safe transport processes expedite the timely transfer of pediatric and bariatric trauma patients to trauma centers. These safe and timely methods also help to reduce injuries and maximize out-of-service times for EMS providers.
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STRATEGY	TIMEFRAME	LEADERSHIP	PARTNER(S)	FUNDING	MEASURES OF SUCCESS
<p>10.5: <u>DEFINITIVE CARE/ACUTE CARE</u>: Establish processes in which hospitals' best practices related to caring for patients with functional needs are shared across the state.</p>					<ul style="list-style-type: none"> ● All hospitals have access to processes that will improve care to patients with functional needs.
<p>10.6: <u>DEFINITIVE CARE/REHABILITATION</u>: Include recommendations specific to persons with functional needs in the updated 2003 Post-Critical Trauma Commission Report.</p>					<ul style="list-style-type: none"> ● Rehabilitation services for trauma patients with functional needs are comparable via state data to patients without functional needs.
<p>10.7: <u>EVALUATION, QUALITY MANAGEMENT & PERFORMANCE IMPROVEMENT</u>: Include significant information on persons with functional needs in state trauma data reports. 10.7.1: Develop programs to address gaps in care for persons with functional needs.</p>					<ul style="list-style-type: none"> ● Gaps in care for persons with functional needs are highlighted in state trauma reports. ● Trauma patients with functional needs receive care equitable to that received by patients without functional needs.
<p>10.8: <u>TRAUMA SYSTEM REGISTRY INFRASTRUCTURE</u>: Establish data elements in state trauma-related databases that identify persons with functional needs so that aggregate data can be trended to demonstrate achievement of care and system gaps for improvement.</p>					<ul style="list-style-type: none"> ● Data elements in the Ohio Trauma Registry (OTR), the EMS Incident Reporting System (EMSIRS), and the Trauma Rehab Registry identify persons with functional needs who are trauma victims in Ohio. This data drives evaluation, quality management and performance improvement in the care of trauma patients in the state.

GLOSSARY

Accountability – Obligation of an individual or organization to account for its activities, accept responsibility for them, and to disclose the results in a transparent manner.

Acute Care Facility – In the context of this document, a hospital that is not a trauma center.

Adult Trauma Victim – A trauma victim between the ages of 16 and 69 years. (See also geriatric trauma victim, pediatric trauma victim)

Agency – A division of government with a specific function offering a particular kind of assistance.

All-Hazards Care – A standardized, integrated, coordinated and trained response for the provision of care during all types of incidents.

American College of Surgeons (Committee on Trauma) – A scientific and educational association of surgeons; the entity which sets the standards for and conducts the trauma center verification program.

Assessment – The regular systematic collection, assembly, analysis, and dissemination of information on the health of the community. These data, from a variety of sources, will assist in determining the status and cause of a problem and will identify potential opportunities for interventions.

Compliance – The process of performing acts according to what is expected or required. In the context of trauma systems, doing those things as required by the State to achieve trauma center status.

Comprehensive Trauma System – A coordinated inclusive system of care for the injured that encompasses all phases of care, from the prehospital setting to rehabilitation services and follow-up care. Such systems include data systems for injury surveillance and prevention as well as for performance measurement and improvement.

Continuum of Care – The concept of care including intentional and unintentional injury prevention, emergency medical services (EMS) 9-1-1/dispatch and medically supervised trauma care intervention, ground and air transportation, emergency department (ED) trauma care, trauma center-organized teams, surgical intervention, intensive and general in-hospital care, rehabilitative services, and mental health and social services.

Cost – The expenses and revenues incurred during the planning, implementation, and evaluation of the trauma system.

Data Systems – A collection of information from which one may make conclusions or inferences. In the context of trauma systems, data sources aid in describing the epidemiology of injury, care and outcome data, as well as cost of system and care, and provide a tool for quality

measurement in the system jurisdiction using population-based data, clinical databases, and accounting data. Such sources may include vital statistics and these types of data: EMS, ED, trauma center and hospital discharge, State police, medical examiner, trauma registry, rehabilitation facilities, and mental health and social services.

Definitive Care – Actions taken or implemented to ensure the needs of the patient are met.

Designation (facility) – The identification of capabilities or status based upon predetermined criteria. In the context of trauma systems, the identification of trauma centers based upon the meeting of specific predetermined criteria.

Deterministic Data Linkage – Data that are linked with direct patient identifiers such as name, Social Security number or medical record number.

Disaster – An unexpected natural or man-made catastrophe of substantial extent causing significant physical damage or destruction, loss of life or sometimes permanent change to the natural environment.

Emergency – In the context of trauma systems, the occurrence of critical or life-threatening injury requiring triage and transportation to resuscitation resources found in trauma centers and acute care hospitals.

Emergency Medical Services – A branch of emergency services which provides prehospital medical care and/or transport of patients with illnesses or injuries to definitive care.

Enabling Legislation – Legislation that provides appropriate officials the authority to implement or enforce the law.

Epidemiology – The study of causes, distribution and control of disease in a population.

ESF (Emergency Support Function) – Used by State Emergency Management Agency as the primary mechanism to organize and provide assistance to local jurisdictions. ESFs align categories of resources and provide strategic objectives for their use. ESF-8 supports public health and medical services.

Evidence-based – Characterized by methods of diagnosis and treatment that are based on demonstrable evidence, that is, their effectiveness has been demonstrated by well-designed, peer-reviewed studies.

Functional Outcome – The use of valid and reliable measurement tools, that is, Functional Inventory Measurement (FIM) and Wee-FIM, functional inventory measurement for pediatric patients, to assess the impact of disease and medical treatment on the lives of affected individuals. Domains assessed include mobility, activities of daily living, and cognitive capabilities.

Gap Analysis – The difference between trauma system standards and the compliance of the trauma system with those standards that result in the identification of system needs.

Geriatric Trauma Victim – Trauma victims age 70 years or older.

High-Risk Populations – Groups of people with unique anatomic and physiologic differences which predispose them to certain types of injuries and may also require a specialized approach to trauma care.

Incidence – The degree or range of occurrence or effect.

Incident – An event that requires an emergency response to protect life or property. Incidents may include major disasters, emergencies, terrorist attacks, wild land and urban fires, floods, hazardous material spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.

Inclusive Trauma System – A system that includes all health care facilities to the extent that their resources and capabilities allow and where the patient's needs are matched to hospital resources and capabilities. An inclusive trauma system encompasses all injuries: minor, moderate, and major. Patients with relatively minor injury need not go to a Level 1 or 2 trauma center, and access to a facility equipped to provide optimal care for injury is available and organized. If the facility is not prepared to provide care needed, there is a well orchestrated plan for expeditious patient transfer to a level of care commensurate with injury

Indicator – A measurable variable or characteristic that can be used to determine the degree of adherence to a standard or the level of quality achieved.

Infrastructure – Basic physical and organization structures needed for the operation of an entity or enterprise. In the context of trauma systems, the identified lead agency within the State; State trauma manager; trauma advisory committee; and supporting legislative language, that is, rules/regulations; trauma data system; identified resource care facilities (e.g., levels of trauma centers and burn centers); workforce; and other essential components to facilitate the implementation, monitoring, and performance improvement of care provided to severely injured people.

Injury – Physical harm or damage to the body resulting from the transfer of or exposure to mechanical, thermal, electrical, or chemical energy or from the absence of such essentials as heat or oxygen.

Interfacility Transfer – Movement of a patient from one care facility to another. In the context of trauma systems, interfacility transfer usually occurs in an effort to move an injured patient to a higher level of care where necessary resources optimize recovery.

Lead Agency / Lead Trauma Agency – A rule-making regulatory body whose membership is analogous to the EMS Board’s Trauma Committee with authority, responsibility and resources to lead development, operations and evaluation of the state trauma system.

Legislative Authority – Statute and regulations. A statutory provision establishing and continuing a government agency, activity, or program.

Level I Trauma Center – Level I trauma center is the highest level of trauma center and a regional resource center. It has a full range of surgical and medical specialists with resources available 24 hours a day and is required to admit a minimum required annual volume of severely injured patients. Additionally, a Level I center has a program of research and is a leader in trauma education and injury prevention.

Level II Trauma Center – Level II trauma center has a full range of surgical and medical specialists with resources available 24 hours a day. It provides comprehensive trauma care, regardless of severity of the injury. A Level II does not have volume requirements or the research obligation; however, it provides trauma education, outreach and injury prevention.

Level III Trauma Center –A Level III trauma center does not have the full availability of surgical and medical specialists, but does have resources for emergency resuscitation, surgery, and intensive care of most trauma patients. A Level III center has transfer agreements with Level I or Level II trauma centers that provide back-up resources for the care of exceptionally severe injuries. Example: Rural or community hospitals

Management Information System (MIS) – This comprehensive system is the collection of data from different sources to enable the review of the entire trauma system. It includes trauma registry, EMS, incident after-action reports, death certificates, crash reports, and cost information. The purpose of the system is to identify and evaluate system best practices, identify and evaluate gaps, review the utilization of trauma resources, track patient outcomes, develop performance standards, and measure system performance against similar systems (benchmarking).

Medical Oversight – The responsibility of supervising actions related to, involving, or used in medicine or treatment.

Morbidity – The relative incidence of disease, the condition of being diseased and the ratio of sick to well persons in a community.

Mortality – The relative incidence of death in a population.

Multidisciplinary – Composed of or combining several fields of expertise.

Ohio Administrative Code – Written statements of law adopted by an administrative agency pursuant to authority granted by the General Assembly to carry out the policies and intent of a statute enacted by the General Assembly. Also known as “Administrative Rules” or simply “Rules”. (See also Ohio Revised Code)

Ohio Revised Code – The laws of the State of Ohio.

Ohio Trauma Registry – Ohio’s trauma system registry. See Trauma System Registry.

Patients with Special Needs / Special Populations – Those individuals who have or are at risk for chronic physical, developmental, behavioral, or emotional conditions and who also require health and related services of a type or amount beyond that required generally.

Pediatric Trauma Victim – A trauma victim under the age of 16.

Performance Improvement (PI) – Methodology for evaluating and improving processes that employs a multidisciplinary approach and that focuses on data, benchmarks, and components of the system being evaluated.

Policy Makers – A person or organization with power to influence or determine laws, rules, policies and practices.

Population-Based – Interventions that are targeted toward populations to promote the overall health status of the community by preventing disease, injury, disability, and premature death.

Prehospital Care – Treatment provided to the trauma victim by emergency medical services before reaching the hospital.

Preparedness – The state of being prepared for specific or unpredictable events or situations.

Primary Injury Prevention – Activities implemented to completely avoid the occurrence of an injury or injury-producing event. Actions taken in anticipation of potential injury events that eliminate or reduce the risk for injury.

Probabilistic Data Linkage – A method of linking data between two or more sources using a computerized judgment process where specific data fields are statistically analyzed in order to conclude that the two records belongs to the same individual. Besides merging databases, this process can also be utilized to remove duplicate records from one database.

Protocol – Standard procedure for the triage, transport, resuscitation, and eventual definitive care of the injured patient.

Public Health (Model) – The science of health promotion and disease / injury prevention with emphasis on population level interventions rather than at the individual level.

Public Health Model – A proven, systematic method for identifying and solving problems. Improvements in the public health system, in partnership with the health care system, can be accomplished through informed, strategic, and deliberate efforts to positively affect health.

Regional / Regional Trauma System – A regional trauma system exists when these neighboring stakeholders formally organize into a structured entity for trauma system development specific to their area. These regions may overlap with other regional systems that exist for other purposes.

Rehabilitation – Services that seek to return an injured individual to the fullest physical, psychological, social, vocational, and cognitive levels of functioning of which he or she is capable, consistent with physiological or anatomical impairments and environmental limitations.

Resources – Somebody or something that assists with trauma development. Examples include but are not limited to the following: personnel, equipment, data, information, facilities.

Regulation – A rule or an order having force of law issued by the executive authority of the government. The term “regulation” is often used interchangeably with “rule.”

Risk Assessment – Information or report that evaluates and summarizes an organization’s vulnerabilities with comparison against benchmarks or regional, state or national standards.

Rule – A statement issued by an authoritative body of what to do in a specific situation. It clarifies or interprets a law. The term “rule” is often used interchangeably with “regulation.”

Secondary Injury Prevention – Initiative used to minimize the severity of an injury at the time of occurrence, such as through the use of safety devices.

Standards – Rules established as a basis of comparison for measuring or judging capacity, quantity, content, extent, value, and quality of services provided. In the context of trauma systems, rules defining resource availability determining trauma and burn care capabilities of hospitals.

Specialty Care Facility – An acute care facility that provides specialized services and specially trained personnel to care for a specific portion of the injured population, such as pediatric, burn injury, or spinal cord injury patients.

Special Populations – Groups of people with unique differences, which include but are not limited to age, physical and mental disability, limited English proficiency, cultural/ethnic or rural/remote location, that create a need for an atypical approach to trauma care.

Stakeholder – A person or group of individuals with a direct interest, involvement, or investment in a matter. In the context of trauma, an individual with interest in trauma care or trauma system development. (e.g., trauma surgeon, trauma program manager, epidemiologist, EMS, ED director, or hospital administrator).

Surge Capacity – A health care system’s ability to rapidly expand beyond normal services to meet the increased demand for qualified personnel, medical care, and public health in the event of bioterrorism or other large-scale public health emergencies or disasters.

Injury Surveillance System – The ongoing and systematic collection, collation, analysis, and interpretation, of information to understand the context in which specific injuries occur. A comprehensive injury surveillance system can be used not only to define and prioritize injury problems but also to support policy and intervention efforts.

Trauma (traumatic injury) – Tissue or organ injury, or both, sustained by the transfer of environmental energy. When a person is “hurt” vs. “sick”.

Trauma Center – A specialized hospital with the immediate availability of specially trained health care personnel who provide emergency care on a 24/7 basis for the severely injured. These specially trained personnel are immediately available to treat patients with ready operating rooms, special equipment, and necessary supplies. They are also committed to continuous quality improvement, education, injury prevention, and research. These hospitals have been verified by the American College of Surgeons by meeting established criteria for either adult or pediatric trauma care. A hospital may function as a Level I, II or III, depending on the depth of resources available.

Trauma System Registry – A collection of data on patients who receive hospital care for certain types of injuries. Such data are primarily designed to ensure quality trauma care and outcomes in individual institutions and trauma systems, but have the secondary purpose of providing useful data for the surveillance of injury morbidity and mortality.

Trauma System Plan – A document which serves as a blueprint for the design, implementation, and ongoing development of a trauma system tailored to meet the unique needs of an individual state. The plan identifies the essential components of its jurisdiction and is designed to meet the needs of all injured persons. All levels of providers will be incorporated into the plan. The plan will provide direction and function as a communication tool so that all components within the system are functioning as a unit. It outlines the organizational structures, system components, basis for system standards, specific objectives of the system, and a means of evaluating and improving system performance, while developing a vision of trauma care for the future.

Trauma System – An organized, inclusive approach to facilitating and coordinating a multidisciplinary system response to preventing injuries and providing care to the injured. A trauma system encompasses a continuum of care delivery and is inclusive of injury prevention and control, public health, EMS field intervention, ED care, surgical interventions, intensive and general surgical in-hospital care, and rehabilitative services, along with the social services and the support groups that assist the injured and their significant others with their return to society at the most productive level possible.

Trauma System Manager – The entity who is responsible for the management, coordination, facilitation, and evaluation of the trauma system. This position may be filled by an individual, a person under the auspices of a larger organization or agency, or a board of trauma experts and professionals.

Trauma Victim – A person who has suffered injuries caused by an external force that pose a threat to life or limb, or that may cause permanent, significant disability or disfigurement.

Triage – The sorting and determining priority on the basis of need or likely benefit. In the context of trauma systems, a process for sorting patients by types and severity of injury to determine transport to facilities where appropriate resources will exist to ensure optimal outcome.

Triage Protocols – Established, written plans for sorting and setting priorities. In the context of this document, protocols are written plans, often backed by rules/regulations that use severity of injury and hemodynamic stability as a criterion for the determination of patient prioritizing and transfer to appropriate facilities.

Verification – An objective process by which trauma care capability and performance of an institution is evaluated by experienced on-site reviewers.



APPENDIX A

List of participants in the March 12, 2008 Trauma System Assessment (an 8-hour facilitated meeting)

Trauma Committee

Nancie Bechtel, RN
John Crow, MD – Chair
Gary Englehart, FACHE
Mark Gebhart, MD
Todd Glass, MD
Vickie Graymire, RN
Kathy Haley, RN – Vice Chair
Jason Kinley, EMT-P
Brian Kuntz, RN, EMT-P
Edward Michelson, MD
Sidney Miller, MD
Greg Nemunaitis, MD
Jennifer Piccione, RN
Kevin Pugh, MD
Jane Riebe
Jonathan Saxe, MD
Michael Shannon, MD
Diane Simon, RN
Richard Ziegler, MD

Trauma Committee Liaisons

Carol Cunningham, MD – State Medical Director, Ohio Department of Public Safety, Division of Emergency Medical Services
Jonathan Groner, MD – State Board of EMS
Virginia Haller, MD – Ohio Department of Health
F. Barry Knotts, MD – Chair, Trauma Registry Advisory Subcommittee

Ohio Department of Public Safety Staff

China Dodley – Public Information Officer
Tim Erskine – Chief, Trauma Systems and Research
Heather Frient – Legal Counsel
Sue Morris – Data Analyst

Participating Guests

Christy Beeghly – Ohio Department of Health, Injury Prevention Program
Jim Dwertman – Ohio Emergency Management Agency
David Evans – Miami Valley Hospital
Scott Highly – Ohio Fire Chiefs Association
Carol Jacobson – Ohio Hospital Association
Herb de la Porte – Ohio Ambulance and Medical Transportation Association

Facilitators – Ohio Society of Trauma Nurse Leaders

Lynn Haas, RN
Patty Wilczewski, RN