

MICHIGAN TRAUMA SYSTEMS PLAN

FINAL
March 2004

Prepared by the
MICHIGAN TRAUMA COALITION, INC.

Funding provided by the Michigan Department of Community Health, Emergency Medical Services, through a Federal Trauma-EMS Systems Implementation Grant

Table of Contents

I.	INTRODUCTION	3
II.	EXECUTIVE SUMMARY	5
III.	COMPONENTS OF A MODEL TRAUMA SYSTEM	9
IV.	DISCUSSION AND RECOMMENDATIONS	
	A) Leadership	11
	B) System Development	11
	C) Pre-hospital Care	17
	D) Definitive Hospital Care	23
	E) Data Collection & Trauma System Evaluation	28
	F) Public Information, Education & Prevention	31
	G) Human Resources	32
	H) Legislation	35
	I) Finances	36
	APPENDICIES	
	A. Qualifications of EMS Medical Director	39
	B. Summary of Michigan's State Injury Prevention Plan	40

I. INTRODUCTION

Trauma kills more people between the ages of one and 44 than any other disease or illness. Nearly 100,000 people of all ages in the United States die from trauma each year, roughly half of them in automobile crashes, with children and young adults experiencing the greatest impact of trauma. According to the National Center for Health Statistics, trauma (unintentional injuries and homicides) causes 43% of all deaths from ages one to four, 48% of all deaths in ages five to fourteen, and 62% of all deaths in ages fifteen to twenty-five.

Trauma injuries most often occur as the result of falls, traffic collisions, and violent assaults such as beatings, shootings, and stabbings. Trauma injuries also result from accidents in the home and work place. Research on injuries at the national and state level shows that a trauma system is likely to reduce greatly the number of deaths and the seriousness of long-term disability from trauma injuries and will ultimately result in cost savings to society.

Injury continues to be a significant public health issue both nationally and in Michigan. Between 1994 and 1998, an average of 5,086 Michigan residents died each year due to injuries and poisonings. Of these deaths, 2,967 (58%) were unintentional; 1,013 (20%) were suicides; 857 (17%) were homicides; and the remainders were of undetermined intent or resulting from adverse effects of healthcare. Unintentional motor vehicle traffic crashes accounted for the highest death rate among the specific mechanism/intent categories. In the same time period, 1994 to 1998, there were an average of 601 firearm homicides each year involving Michigan residents and transportation-related incidents were the leading cause of work-related deaths. The Michigan Trauma Coalition estimates that this type of injury accounts for 5% to 10% of the injuries seen in hospital emergency departments, ranks nationally as one of the top three causes of premature death for all ages, and is the number one killer of children and young adults in the state.

An analysis of the medical costs of injury in Michigan for 1997-1998 by the Michigan Department of Community Health revealed that the overall annual medical cost of injury was almost \$3.6 billion. When work loss and quality of life costs were considered, the overall cost of injuries was a \$54.9 billion problem.

Definition of Trauma

The American Trauma Society defines trauma as an injury caused by a physical force. More often, trauma is the consequence of motor vehicle crashes, falls, drowning, gunshots, fires and burns, stabbings, or blunt assaults.

The American College of Surgeons Committee on Trauma explains trauma as a bodily injury that may encompass a large range of severity. The current view of trauma, according to the Committee, has focused primarily on those injuries severe enough to cause death or disability. This Committee has always believed that trauma is a surgical disease that demands surgical leadership in the planning, development, and maintenance of a Trauma System.

The Michigan Trauma Coalition, a voluntary nonprofit organization, defines major trauma as including internal injuries to organs, head and spinal injuries, and other serious injuries that can result in death, loss of a limb, or permanent disability if a person does not receive appropriate care within one hour.

In the majority of trauma injury cases, patients who come to a hospital's emergency department are treated by emergency physicians and discharged without requiring surgery or care by a trauma service. However, patients with serious injuries require stabilization within the "Golden Hour," as it is called, after the injury occurred, to improve the chances of survival and to minimize disability. If the patient arrives at a facility that does not have the necessary equipment and

medical personnel, transportation of the patient to an appropriate facility for care by the appropriate medical personnel is needed within that “Golden Hour.”

A Trauma System

Historically, trauma centers were inner city county hospitals that had de facto trauma center status; however, in the 1970s, an evolution occurred with the development of trauma systems. Although the trauma center is a key component of acute care for the severely injured, a trauma system encompasses all phases of care, from pre-hospital care through acute care and rehabilitation.

The term “inclusive trauma system” is used for this all-encompassing approach, as opposed to the term “exclusive system,” which focuses only on the major trauma patient in the major trauma center cared for by the trauma team. An inclusive system guarantees that all injured patients will receive optimal care, given available resources, even if they do not require the resources of a specialized trauma center. The involvement of all acute care facilities in trauma patient care education programs and basic data acquisition will aid in attaining this goal of optimal care for all injured patients.

The American College of Surgeons Committee on Trauma notes that an ideal trauma system would include all the elements to provide optimal trauma care, such as prevention, access, pre-hospital care, acute hospital care, rehabilitation, and research activities. While encouraging the development of trauma systems and trauma centers, the Committee acknowledges that there are a number of factors, including financial considerations, that affect a system’s ability to provide optimal care of injured persons. The Committee, however, still advocates that formal categorization of trauma care facilities is essential for the development, implementation, and improvement of medical systems to provide this care. Additionally, verification of a hospital’s commitment and capability to provide trauma care is an early step in the development of a Regional Trauma Network.

II EXECUTIVE SUMMARY

The following 18 recommendations will enable Michigan to better ensure optimal care of injured patients through the development of a cost-effective and coordinated statewide trauma system.

RECOMMENDATION 1 Establish Michigan's Lead Trauma Agency

In Michigan, the Lead Agency for the Michigan Trauma System shall be the Division of Emergency Medical Services in the Michigan Department of Community Health. State level responsibilities shall include:

- a) Establish a statewide trauma quality improvement process using a statewide database, which is compatible with trauma, emergency departments, and pre-hospital data systems; monitor the statewide trauma system; ensure the coordination and performance of the regional trauma networks; establish minimum standards for system performance and patient care.
- b) Assign a dedicated State Trauma Director and supporting resources.
- c) Implement and maintain a statewide plan for a trauma system for Michigan, that addresses state leadership; public information & prevention; human resources; communications; medical direction; triage; transport; trauma care facilities; inter-hospital transfers; rehabilitation; and evaluation of patient care and the system
- d) Ensure integration of the trauma and Emergency Medical Systems (EMS), including all pre-hospital and organ procurement organization components.
- e) Develop a statewide process for the designation of Regional Trauma Network. Establish Regional trauma networks comprised of local Medical Control Authorities (MCAs) in a manner that does not duplicate existing regional emergency preparedness, EMS or Medical Control systems.
- f) Develop a statewide process for the verification of trauma resources.
- g) Develop a statewide process for the designation of trauma facilities.
- h) Develop an appeals process for facilities contesting their designation.
- i) Establish state guidelines and approve regional trauma triage protocols.

RECOMMENDATION 2 Establish a State Trauma Advisory Committee

The Director of the MDCH shall appoint a State Trauma Advisory Committee to advise the Lead Agency on all matters concerning the development and operation of the state and regional trauma networks. The State Trauma Advisory Committee will operate as a sub-committee of the EMSCC and shall be comprised of eight members including two trauma surgeons who are trauma center directors, a trauma nurse coordinator, a trauma registrar, an emergency physician, a hospital representative, a life support agency manager, and one medical control authority medical director.

RECOMMENDATION 3 Establish Regional trauma networks

The Lead Agency shall establish eight Regional trauma networks, identical to the current eight Emergency Preparedness Regions, to provide clinical oversight of trauma care provided in each region of the state. (Please note that the State has omitted a "Region #4, but has divided Region #2 into two parts). Regional trauma networks shall be comprised of collaborating local Medical Control Authorities (MCAs) in a region. The collaborating MCAs in a region would apply to the Lead Agency for approval and designation as a Regional Trauma Network. The eight Regional trauma networks shall operate as a sub-division of its respective MDCH-OPH designated Domestic Preparedness Region.

RECOMMENDATION 4 Implement an “All-Inclusive” Trauma System

Michigan shall implement an “all-inclusive” trauma system throughout the state. This type of system allows for the inclusion of all injured patients in a system of health care providers in the out-of-hospital and hospital environments who are well trained and equipped to care for those injured patients of any severity. It allows for hospitals to participate in the system to the extent (level) that they are willing to commit the resources necessary for the appropriate management of the injured patient. It also ensures that all injured patients are part of the system of coordinated care, based on level of injuries and care required.

RECOMMENDATION 5 Implement Tiered Triage Protocols

Major trauma patients requiring the resources of a Regional Trauma Research Center or Regional Trauma Center shall be identified by adult and pediatric field triage criteria established by the Regional Medical Control Authorities, under guidelines established and approved by the Lead Agency, based on the recommendations of the State Trauma Advisory Committee.

Tiered triage protocols will enable the trauma system to identify those severely injured patients who require the resources of sophisticated Regional Trauma Research Center or Regional Trauma Center, as well as those patients who are appropriately cared for in Community Trauma Facility or Trauma Support Facility. This avoids over taxing the Regional Trauma Research or Regional Trauma Centers, and ensures the inclusion of Community Trauma and Trauma Support Facilities in the system.

RECOMMENDATION 6 Designation and Verification of Trauma Facilities

The Lead Agency shall designate the existing trauma resources of all hospitals in the state, based, upon the following four categories:

- a) For a Regional Trauma Research Center, the most current verification criteria established by the American College of Surgeons Committee on Trauma (ACSCOT) for level I trauma centers;
- b) For a Regional Trauma Center, the most current verification criteria established by the ACSCOT for level II trauma centers;
- c) For a Community Trauma Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level III facilities.
- d) For a Trauma Support Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level IV facilities.

The Lead Agency may modify the criteria or establish additional levels of trauma care resources as appropriate to maintain an effective state trauma system and protect the public welfare.

The resources of hospitals applying for Regional Trauma Research Center or Regional Trauma Center designation status shall be verified by the ACSCOT. Hospitals seeking designation as either a Community Trauma or Community Trauma Support Facility shall be verified using an “in-state” process established by the Lead Agency, with the advice of the State Trauma Advisory Committee.

RECOMMENDATION 7 Timeframe for Verification

The Lead Agency shall verify the trauma care resources of all hospitals in Michigan over a three-year period.

RECOMMENDATION 8 Designation of Trauma Facilities

The Lead Agency shall designate the trauma capabilities of each hospital on the basis of a verification process and recommendations made by each Regional Trauma Network.

RECOMMENDATION 9 Periodic Re-Designation of Trauma Facilities

The Lead Agency shall establish a mechanism for periodic re-designation of all hospitals.

RECOMMENDATION 10 Hospital Participation in Data Collection

All hospitals and emergency centers shall be expected to participate in data submission.

RECOMMENDATION 11 Confidentiality of Trauma Data

The confidentiality and protection of patient data collected as part of Trauma System performance improvement activities shall be provided and maintained through existing state legislation included in the Public Health Act Code.

RECOMMENDATION 12 Phase in of Data Collection Systems

The comprehensive data collection system shall be phased in over a five-year period:
Year 1 – Establish regions, define data dictionary, and define the data download and data verification process. Establish regional and state committee structure. Download all ACS verified trauma center data to a regional trauma registry. Generate reports and evaluate uniformity of data.

Year 2 – Work towards uploading regional data to state registry. Identify all hospitals for data submission. Establish a data collection process for non-trauma centers. Initial evaluation of regional data by regional committees and upload the data to the state trauma registry.

Year 3 – Develop annual reports using regional and state data defined by the State Trauma Data Oversight Committee. Assess the state trauma system and Regional Trauma Network.

Year 4 – Expand the trauma data collection system to include all participation hospitals.

Year 5 - Evaluate and import additional data from existing databases on a needs basis.

RECOMMENDATION 13 MCA Performance Improvement Plans

Each Medical Control Authority shall adopt and implement a regional trauma network Performance Improvement Plan and protocols as developed by the regional trauma network and approved by the Lead Agency.

RECOMMENDATION 14 Evaluation of System Performance

A plan for evaluating individual trauma system components and system operations, including the responsibility or monitoring compliance with standards, maintaining confidentiality and periodic review of trauma facility standards will be developed by the Lead Agency, with the advice of the state-level Trauma Advisory Committee.

RECOMMENDATION 15 Evaluation of System Effectiveness

A plan for assessing the effectiveness of the system as it relates to meeting the needs of injured persons, availability of appropriate resources, and costs will be developed by each Regional Trauma Network and approved by the Lead Agency, with the advise of the State Trauma Advisory Committee.

RECOMMENDATION 16 Trauma Injury Prevention Planning

The Lead Agency shall work with the Michigan Department of Community Health's Childhood and Unintentional Injury Prevention Section (IPS) to ensure the coordination and integration of all state injury prevention initiatives and programs.

RECOMMENDATION 17 Trauma Systems Staffing Requirements

The Lead Agency and all supporting components of the state trauma system must be adequately staffed to carry out its responsibilities and functions. Human resources required by the proposed state trauma system include the following positions:

- State EMS/Trauma Medical Director at 0.5 FTE
- Trauma Program Manager at 1.0 FTE
- State Trauma Registrar at 1.0 FTE
- State Database Manager at 1.0 FTE
- Administrative support at 1.0 FTE
- Eight Regional Trauma Coordinators at 1.0 FTE each
- Regional Trauma Registrars at 0.5 FTE each
- MCA staff support at the local level

RECOMMENDATION 18 A Trauma Systems Education Plan

The Lead Agency shall conduct an accurate assessment of the training and education needs of trauma care personnel in the State.

III. COMPONENTS OF A MODEL TRAUMA SYSTEM

In an effort to revitalize trauma system development efforts and abate the erosion of existing systems, Congress passed the Trauma Systems Planning and Development Act of 1990. This Act amended the Public Health Service Act by adding Title XII – Trauma Programs. This legislation underscores the recognition of injury as a public health problem and specifically requires the development of a Model Trauma Systems Plan, which states may use as a reference guide in the development of a comprehensive Trauma Systems Plan as part of the statewide Emergency Medical Services plan.

The Model Trauma Systems Plan reflects the concept of an inclusive Trauma System in which every health care provider or facility with resources to care for the injured patient is incorporated. Effective trauma systems require clear integration of all components in each phase of care and draw upon the capacity of health care providers to reduce mortality and disability regardless of the severity of the injury involved.

An inclusive Trauma System will not only incorporate provisions for designated trauma centers to care for the most severely injured patients, but also recognizes the importance of other acute care facilities within a trauma system in caring for the majority of less severely injured. The goal of an inclusive trauma system is to match each trauma care facility's (or provider's) resources to the needs of injured patients so that every patient receives optimal care from the initial recognition of the injury through return to the community. Once an injury occurs, optimal care necessitates that adequate numbers of specially trained trauma care personnel are available to provide care from access of the system to the delivery of rehabilitative services.

The American College of Surgeons and the U.S. Department of Health and Human Services have identified key components of an effective state trauma system including:

- 1) Leadership: Defines and describes the role and responsibility of the authority that will take a leadership role in trauma system development. This lead agency is usually placed within a governmental entity. The state lead agency is ultimately responsible for system design, as well as the establishment of the minimum standards for system performance and patient care.
- 2) System Development: The sequence of system development must reflect the unique needs of the region and more emphasis may be placed on specific components of the plan as directed by the initial needs assessment. Planning describes the process for needs assessment, identification of appropriate resources, development and implementation of the trauma care plan, and the systematic review of the planning process. Professional and consumer groups shall participate in trauma system planning and the establishment and implementation of guidelines and standards for trauma care.
- 3) Pre-Hospital Care: The components of pre-hospital care are communication, medical direction, and transportation. Communication systems provide essential coordination among the components of the EMS and trauma system. Dispatch of pre-hospital providers shall be centralized in each region to facilitate system-wide trauma and emergency response coordination. Medical direction provides the operational framework for field providers and assures appropriateness of all medical aspects of the pre-hospital program with the same professional accountability as medical care in the more traditional settings. Trauma patients shall be delivered in a timely fashion to designated facilities utilizing the most expedient and appropriate means of transport.

- 4) Definitive Hospital Care: The trauma system shall integrate all hospitals into an inclusive system or network of definitive care facilities in order to provide a spectrum of care for all injured patients. The system shall describe the process for selection and monitoring designated trauma centers and define the responsibility of trauma system support hospital and the role of specialty care facilities.
- 5) Data Collection and Trauma System Evaluation: The components of an evaluation are data collection, trauma system evaluation, and trauma center evaluation. A central medical audit committee, to provide medical guidance and system oversight to the lead agency, is an important adjunct to system review and quality improvement activities.
- 6) Public Information, Education and Prevention: The Lead Agency shall develop a plan to heighten public awareness of injury as a public health problem, to explain the need for a trauma system, to describe how the trauma system operates and how the system can be assessed. The Lead Agency shall establish a trauma constituency to promote trauma system awareness and assist with injury prevention activities.
- 7) Human Resources: The trauma system cannot provide optimal care for seriously injured patients unless necessary trauma care personnel are adequately trained and available in sufficient numbers throughout the state and in all areas of the system.
- 8) Legislation: Legislation shall be enacted that establishes authority for the lead agency, identifies key provisions to be included in trauma system legislation, and ensures authorization for allocation of sufficient resources to cover cost of trauma system administration and operations.
- 9) Finances: Funding for a comprehensive trauma system must be dedicated to and sufficient to cover its development, implementation and evaluation. To allow for a consensus of funding priorities by all system participants, funding distribution shall be closely linked to the needs assessment and priorities set by the lead agency as it works in conjunction with its system advisory committee. The lead agency that successfully demonstrates a positive cost-benefit analysis, secure participant support, and consumer satisfaction, can ultimately sustain funding.

IV. DISCUSSION AND RECOMMENDATIONS

A. Leadership

A State Lead Agency must ensure that all trauma system components are integrated with the EMS system components, and that the trauma system components are integrated with other systems such as regional or Federal agencies (e.g. National Park Service, military bases), Emergency Preparedness Coalitions, Native American Indian lands, and contiguous states. The Lead Agency must establish, implement, and maintain policies, procedures, and protocols for trauma care within the EMS system.

Current Status:

Michigan is one of five states that do not have an organized, statewide trauma system for the care of trauma patients. Although many individual components of a trauma care delivery exist in Michigan, a system and the components are incomplete and have yet to be organized into an effective, coordinated trauma system.

In a large number of states, responsibility for development and operation of an organized trauma system rests within a state-level Division of Emergency Medical Services. The Emergency Medical Services Division of the Michigan Department of Public Health had the legislative authority under the provisions of the Michigan Public Health Code (Part 209 of the Public Acts of 1978 as amended), to administer, fund, and regulate a statewide pre-hospital emergency medical services program in the state. The EMS legislation, however, did not provide adequate authority to plan, coordinate, fund, and monitor a statewide trauma system.

Michigan's Emergency Medical Services Coordination Committee (EMSCC) was created in the early 1990s, under Public Act No. 179 of 1990, to advise the state in its regulation of Michigan's pre-hospital emergency medical services. The EMSCC has assisted the EMS division in its oversight of local medical control authorities, addressing local medical control issues, and in the development of state rules and regulations pertaining to pre-hospital EMS issues.

The Emergency Medical Services Division was transferred to the Michigan Department of Consumer & Industry Services in March 1998. In December 1999, the Department of Consumer & Industry Services was reorganized, resulting in changes in the EMS program. The EMS Division is now the EMS Section in the Bureau of Health Systems and is responsible for life support agency and vehicle licensure, medical control, communications, EMS data, and the EMS for Children grant. The Bureau of Health Services is responsible for the licensure and regulation of EMS personnel. In addition to these two separate entities of the Michigan Department of Consumer & Industry Services, state-level EMS injury prevention activities are also occurring in the Michigan Department of Community Health, and the Michigan Department of State Police's Office of Highway Safety Planning.

Under the Public Health Code, the state designated medical control authorities to provide medical control for emergency medical services at the local level. Each Medical Control Authority is designated to provide medical oversight, within an emergency medical services system, including the supervision and coordination of emergency medical services as prescribed, adopted, and enforced through department-approved protocols. Currently, Michigan has 65 medical control authorities.

B. Trauma Systems Development

A trauma system must be distinctly integrated into the overall EMS system, and a Trauma Systems Plan must incorporate the use of existing EMS resources, including those for special

populations. Integration prevents duplication of services and resources, maximizes efficiency and hence should reduce overall costs. Inherently, there is a great need for cooperation between states/regions that supersedes geographic boundaries in order to meet the needs of any injured patient regardless of where the injury occurred.

A trauma system consists of hospitals, personnel, and public and private safety agencies that utilize a preplanned response to care for the injured patient. This approach includes a central core of clinical and operational components that have been established to provide effective patient care once the injury has occurred. This response requires the use of coordinated communication systems, accurate identification of the level of care needed by the injured patient, rapid transport to the appropriate facility, and the integration of support and rehabilitative services designed to return the patient back to a productive life.

A state should develop a Trauma Systems Plan that is flexible enough to incorporate the unique needs of each region and its population. The needs of specialty patient populations such as pediatric patients or burn patients must be considered in order to facilitate the use of concentrated resources and expertise in centers devoted to meet the unique assessment and treatment needs of these special groups. The success of any trauma plan and resultant system depends on the ability to ensure that each injured patient will receive timely access to resources and optimal care which will enable the patient to expeditiously return to the community as a productive member of society.

Current Status:

In November 2002, the Michigan Statewide Trauma Care Commission reported its findings on issues related to trauma care delivery in Michigan could be categorized as follows:

- Issues involving oversight, administration, coordination, assessment, and evaluation of trauma care delivery.
- Issues related to the lack of an adequate infrastructure to support expansion of the trauma system, i.e. lack of trauma facilities in certain areas of the state and lack of appropriate transportation vehicles for the state's geography and inclement weather.

In July 2003, the Michigan Department of Consumer and Industry Services contracted with the Michigan Trauma Coalition to convene a Trauma Care Planning Committee comprised of its membership, members of the former Michigan Statewide Trauma Care Commission, and other interested parties to: (a) develop this Model Trauma Systems Plan; and (b) develop an Implementation Plan for the establishment of a statewide Trauma System in Michigan.

The goal of the Trauma Care Planning Committee is to:

- Use the Trauma Care Commission's trauma report and the "Model Trauma Systems Plan" to develop a Michigan Model Trauma Systems Plan.
- Develop a Trauma Systems Implementation Plan; and
- Assist the Lead Agency in the conduct of implementation activities.

The Implementation Plan will describe: (a) the process for development and implementation of the trauma care plan; (b) the format for trauma plan implementation and approval: objectives, proposed action plan, and implementation schedule; (c) the process for establishing and implementing guidelines and standards for trauma care; and (d) the systematic review of the plan.

RECOMMENDATION 1 Establish Michigan's Lead Agency

In Michigan, the Lead Agency for the Michigan Trauma System shall be the Division of Emergency Medical Services in the Michigan Department of Community Health. State level responsibilities shall include:

- a) Establish a statewide trauma quality improvement process using a statewide database, which is compatible with trauma, emergency department, and pre-hospital data systems; monitor the statewide trauma system; ensure the coordination and performance of the regional trauma networks; establish minimum standards for system performance and patient care.
- b) Assign a dedicated State Trauma Director and supporting resources.
- c) Implement and maintain a statewide plan for a trauma system for Michigan, that addresses state leadership; public information & prevention; human resources; communications; medical direction; triage; transport; trauma care facilities; inter-hospital transfers; rehabilitation; and evaluation of patient care and the system
- d) Ensure integration of trauma and Emergency Medical Systems (EMS), including all pre-hospital and organ procurement organization components.
- e) Develop a statewide process for the designation of regional trauma networks. Establish regional trauma networks comprised of local Medical Control Authorities (MCAs) in a manner that does not duplicate existing regional emergency preparedness, EMS or medical control systems.
- f) Develop a statewide process for the verification of trauma resources.
- g) Develop a statewide process for the designation of trauma facilities.
- h) Develop an appeals process for facilities contesting their designation.
- i) Establish state guidelines and approve regional trauma triage protocols.

RECOMMENDATION 2 Establish a State Trauma Advisory Committee

The Director of MDCH shall appoint a State Trauma Advisory Committee to advise the Lead Agency on all matters concerning the development and operation of the state and regional trauma networks. The State Trauma Advisory Committee will operate as a sub-committee of the EMSCC and shall be comprised of eight members including two trauma surgeons who are trauma center directors, a trauma nurse coordinator, a trauma registrar, an emergency physician, a hospital representative, a life support agency manager, and one medical control authority medical director.

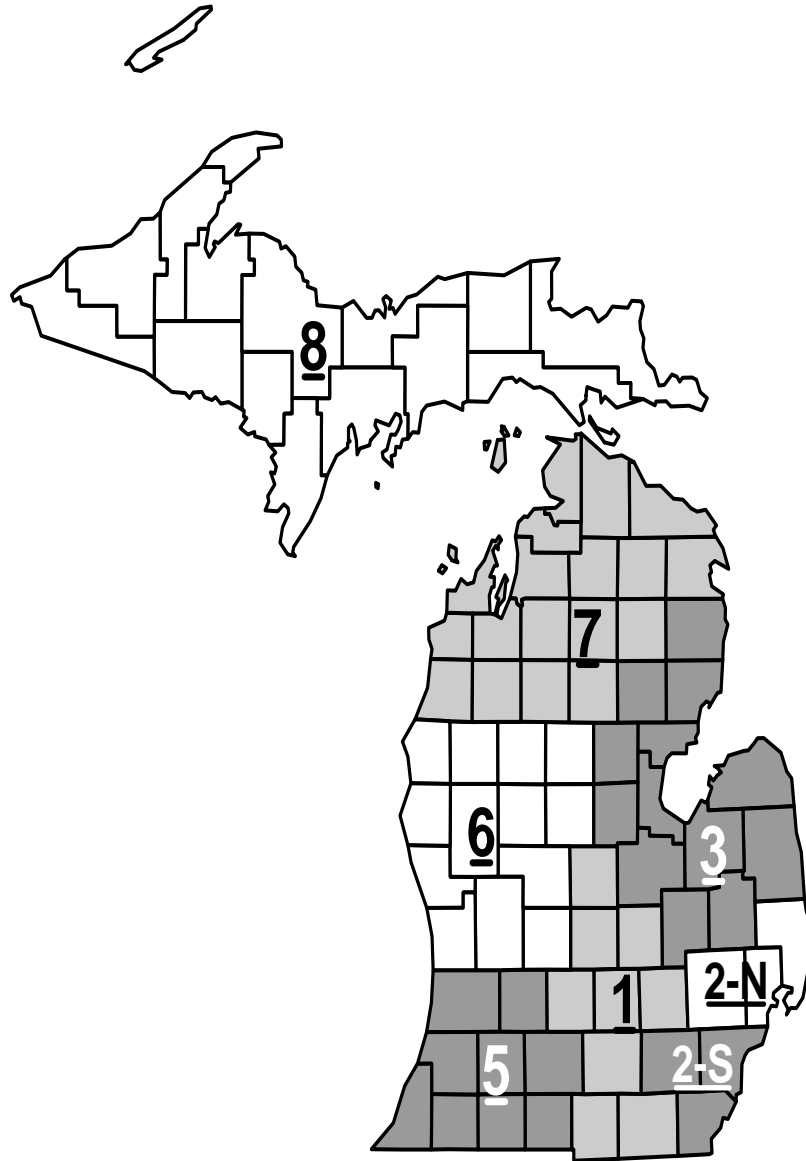
RECOMMENDATION 3 Establish Regional Trauma Networks

The Lead Agency shall establish eight Regional Trauma Networks, identical to the current eight Emergency Preparedness Regions, to provide clinical oversight of trauma care provided in each region of the state. (Please note that the State has omitted a "Region #4, but has divided Region #2 into two parts). Regional trauma networks shall be comprised of collaborating local Medical Control Authorities (MCAs) in a region. The collaborating MCAs in a region would apply to the Lead Agency for approval and designation as a Regional Trauma Network. The Regional Trauma Networks shall not duplicate existing regional emergency preparedness, EMS or Medical Control systems.

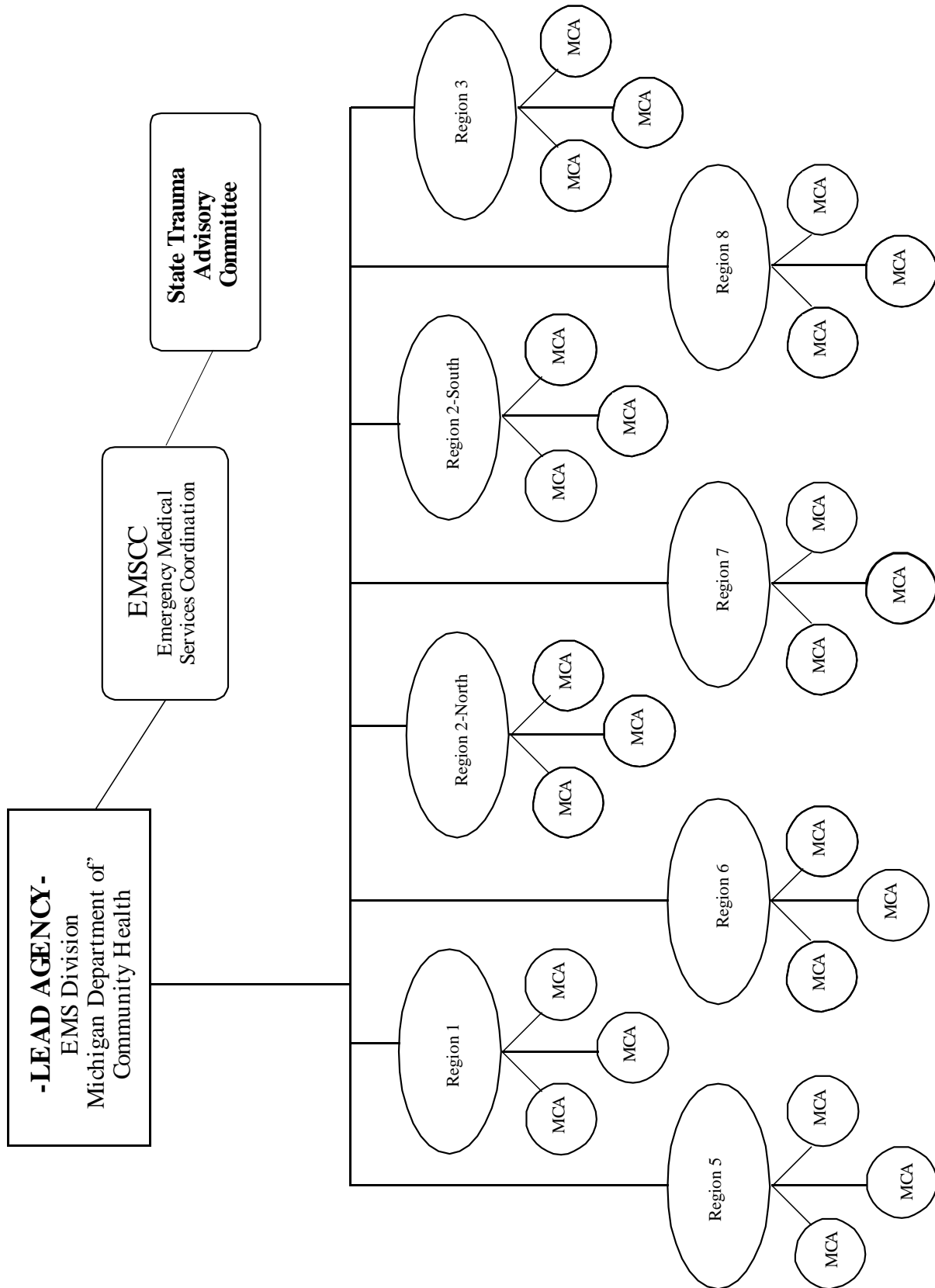
Each Medical Control Authority (MCA) in Michigan must participate in a Regional Trauma Network, and shall adopt and implement Regional Trauma Network protocols as developed by the Regional Trauma Network and approved by the Lead Agency. A board of the participating MCAs shall administer each Regional Trauma Network. Each Regional Trauma Network shall:

- a) Appoint a trauma system committee, comprised of MCA personnel, EMS personnel, life-support agency representatives, hospital representatives, physicians, nurses and consumers to provide leadership and direction in matters related to trauma systems development in their region, and monitor the performance of agencies and hospitals within the region, including but not limited to, the review of all trauma deaths and preventable complications.
- b) Develop the Regional Trauma Network consistent with the state trauma plan and as approved by the Lead Agency. Approval of the Regional Trauma Network's plan will be based on minimum criteria established by the Lead Agency, and shall address each of the following trauma system components: leadership; public information & prevention; human resources; communications; medical direction; triage; transport; trauma care facilities; inter-hospital transfers; rehabilitation; and evaluation of patient care and the system.
- c) Develop destination protocols based on the state trauma triage criteria and ensure they are followed.
- d) Monitor the delivery of patient care through the review of all trauma deaths and by monitoring preventable complications.
- e) Conduct quality improvement activities to monitor the performance of hospitals and patient care providers in meeting patient care standards based on the approved triage criteria and destination protocols.

MAP OF EMERGENCY PREPAREDNESS REGIONS



MICHIGAN TRAUMA SYSTEM STATE AND REGIONAL TRAUMA NETWORK DIAGRAM



C. Pre-Hospital Care

The out-of-hospital care provided to the trauma patient is critical to overall patient morbidity and mortality and to the success of the trauma system. It is also critical that the out-of-hospital aspects of the trauma system be coordinated with the care provided in the definitive care centers. The out of hospital components of a trauma system include communications, EMS medical direction, a tiered system of triage, and transportation. These systems must provide easy access, prompt response by qualified professional responsible for assessment, stabilization, triage and transport to the nearest appropriate trauma care facility.

COMMUNICATIONS

Effective communications among all aspects of the trauma system, from identification of the event through definitive care, is an essential component of the trauma system. The communication system starts with the event identification and public access to care and extends through EMS dispatch of first response and transporting resources, coordination of communication among all the out-of-hospital agencies, communication with the receiving facility and overall integration and quality management of the process.

- **Current Status of Public Access**

The majority of Michigan is covered by enhanced 9-1-1 programs which allow the caller's phone number and phone's registered location to appear on the 9-1-1 call-taker's computer screen, facilitating identification of the location from which the call is being made. The only area of the state currently not accessible via 9-1-1 is Schoolcraft County in the Upper Peninsula. In these areas, the caller must identify the correct 7-digit phone number to activate the EMS system, and the call-taker must identify the location from the caller manually. Cell phone calls in Michigan are routed through a regional Michigan State Police Post from which the information must be transferred to the appropriate response agencies. It is estimated that, by 2005, cell phones will routinely be able to electronically transfer the location from which the call is being made (GPS) to those 9-1-1 centers equipped to electronically receive that information.

- **Current Status of Dispatch Priorities**

Most Public Safety Answering Points (PSAPs - 9-1-1 centers) in Michigan are operated by public safety agencies. Requests for EMS response are then transferred to the appropriate EMS agency (municipal, not for profit or for profit) for that jurisdiction for dispatch of needed resources. In some cases, the 9-1-1 center is responsible for EMS resource dispatch. In many areas of the state, several dispatch centers are involved in the dispatch of EMS resources to the same event. This causes some delay in all appropriate resources being dispatched. With evolving technology and the establishment of secondary PSAPs, information transfer can occur more rapidly and will facilitate resource dispatch.

Many EMS agencies in the state utilize Medical Control Authority-approved emergency medical dispatch programs and have dispatch personnel trained and certified by national organizations. Through these programs, decisions regarding the appropriate level of resource response are made and communications personnel have the capability of providing telephone instructions to the caller to care for the victim prior to medical personnel arriving on the scene. Depending on the area of the state, those Emergency Dispatch programs are provided by the 9-1-1 center or by the individual EMS agency. Emergency Dispatch programs in the organization responsible for EMS dispatch activities are not universal throughout the state.

Response time standards, where they exist within MCAs, are established by the local MCA based on available response resources and geography (urban, suburban, and rural). Although it would be difficult to establish universal response time standards throughout Michigan, those standards shall be established by all MCAs.

Air medical program dispatch is accomplished via request for service of the air medical service from the EMS communications center.

- **Current Status of Communication System Integration**

Even though communication systems exist, (a) there is no overall coordination; (b) there is poor, intermittent communication capabilities; and (c) no one common system in place.

All EMS agencies in the state have the capability of dispatch to ambulance and ambulance-to-ambulance communications, either via radio or cellular telephone equipment. There are some rural areas of the state, however, in which that capability is stretched from geography and distance. In addition, ground EMS agencies do not all have similar communications capabilities (with the exception of the state Hospital – Emergency Room Network (HERN) frequency) and it is often difficult or impossible for different ground agencies to communicate between each other's resources; there is very limited interagency communication capability. Although the air medical programs have dedicated frequencies for each organization, those programs do have communications resources for interagency communications, with both ground and other air medical programs.

Interagency communication needs are an integral focus of the state's domestic preparedness activities with the goal of facilitating communications among multiple agencies, including EMS, law enforcement and fire service. In particular, regional EMS agency and hospital communications issues are being addressed.

Michigan does have an 800 MHz communication system in place, currently being used primarily by the Michigan State Police. Expansion of the system into the EMS response community is being investigated in some areas as part of domestic preparedness planning activities.

Michigan has a statewide Medical Communications (MEDCOM) plan to address the communication needs from field providers to hospital, coordinated at the local level. All EMS transporting services have capabilities to talk with the hospitals in their local area, either on HERN or UHF MED channel frequencies and / or telephone (land line and cellular). Local MCAs have established protocols that define the times hospital communication are required and the information that must be communicated to hospital personnel. This is especially important when transporting critically injured patients so that the trauma response plan (e.g. trauma code) can be activated prior to the patient's arrival at the facility. The state trauma communications plan shall provide for consistency among all Medical Control Authorities (MCAs) regarding information provided to the hospital prior to arrival.

The ability of hospitals to communicate with each other varies around the state. All hospitals have telephone capabilities to contact with other and share information. Availability of other communication resources, however, is highly variable. All hospitals have HERN capability but typically no other back-up method. The on-going domestic preparedness planning activities are addressing this issue. In particular, many regional planning initiatives are exploring additional communication links among hospitals, EMS agencies and other public safety response organizations. The development of regional Medical Coordination Centers (MCC) is being considered to facilitate communications and resources sharing among the regional EMS

agencies and hospitals, particularly during mass casualty incidents, disasters or other catastrophic events.

As noted above, the state MEDCOM plan serves to facilitate and coordinate communication activities at the local levels. With further development of the regional dispatch actives, the MEDCOM plan will also facilitate regional communications among hospital and prehospital agencies. The MEDCOM plan will be regularly reviewed and updated to meet those evolving needs and insure that communications resources match available technology.

- **Current Status of Quality Management**

It is incumbent on each MCA to ensure that the local communication system is routinely evaluated and to work with other MCAs in the region to ensure compatibility and interoperability. Local MCAs must also include the dispatch and communications components of their system in the activities of the quality improvement programs. Medical Directors at the local and regional levels must be integrally involved in those quality improvement (QI) activities. Additionally, mechanisms must be established for the reporting of information to the Lead Agency and / or the EMSCC.

EMS MEDICAL DIRECTION

Medical oversight of EMS activities in Michigan is provided under Michigan Public Health Code (Part 209 of the Public Acts of 1978 as amended), through a system of Medical Control Authorities established by the area participating hospitals. Currently, there are 65 MCAs in the state. Generally, the MCAs include a county geographic area, although Wayne County is divided into two MCAs and there are some multiple county MCAs.

- **Current Status of Medical Control Authorities**

The development and coordination of an effective statewide Trauma System in Michigan would require involvement of the 65 medical control authorities currently responsible for providing medical direction for the pre-hospital level of care. With implementation of a statewide trauma system, the role of the Medical Control Authority would expand to include responsibility for coordinating activities of the three components of the trauma system; EMS personnel, emergency departments, and in-patient trauma care providers.

Under the Public Health Code, the Department of Community Health is required to designate a Medical Control Authority as the medical control for emergency medical services for a particular geographic region. A Medical Control Authority is designated to provide medical oversight, within an emergency medical services system, including the supervision and coordination of emergency medical services as prescribed, adopted, and enforced through department-approved protocols. The Department has designated medical control authorities for each county, and in some cases for two or more counties where deemed appropriate by the Department

- **Current Status of Hospital Facility Oversight of the Local MCA**

Each Medical Control Authority is administered by the participating hospitals in the geographic area served by the MCA. The Public Health Code requires that each licensed hospital and freestanding surgical outpatient facility that operates a service for treating emergency patients 24 hours a day, seven days a week and meets standards established by Medical Control Authority protocols be given the opportunity to participate in the ongoing planning and development activities of the local Medical Control Authority. Hospitals and freestanding surgical outpatient facilities must adhere to protocols for providing services to a patient before a

patient's care is transferred to hospital personnel to the extent that those protocols apply to a hospital or freestanding surgical outpatient facility.

- **Current Status of Medical Control Rules and Regulations**

Licensed life support agencies and emergency medical services personnel are accountable to the Medical Control Authority in the provision of emergency medical services, as defined in protocols developed by the authority and approved by the department.

Participating hospitals are required to appoint an advisory body for the Medical Control Authority that includes, at a minimum, a representative of each type of life support agency and each type of emergency medical services personnel functioning within the authority's boundaries. Not more than 10% of the advisory body's membership can be employees of the medical director, who is appointed by a Medical Control Authority, or an entity substantially owned or controlled by the medical director.

The medical director must be a physician who is board certified in emergency medicine, or who practices emergency medicine and is certified in advanced cardiac life support and advanced trauma life support, and who meets other standards established in department rules. The medical director is responsible for medical oversight for the emergency medical services system served by the Medical Control Authority.

The local Medical Control Authority must establish written protocols for the practice of life support agencies (an ambulance operation, non-transport pre-hospital life support operation, aircraft transport operation, or medical first response service) and licensed emergency medical services personnel within its region. The protocols must be developed and approved in accordance with departmental procedures and include, among other specified items, the acts, tasks, or functions that may be performed by each type of emergency medical services personnel, and medical protocols to ensure the appropriate dispatching of a life support agency based on medical need and the capability of the emergency medical services system.

Some areas of the state have previously voluntarily formed Regional Networks for the purpose of protocol consistency and joint medication and equipment sharing. In addition, with the regional bioterrorism planning initiative, the state has adopted the Emergency Management Divisions as regional planning entities. This has resulted in many MCAs within several regions working much more closely together.

- **Current Status of Medical Control Responsibility**

The Medical Control Authority is responsible for oversight of all levels of EMS personnel: medical dispatch, medical first responders, and emergency medical technicians (basic, specialist and paramedic). It is also responsible for oversight of off-line medical direction activities within the MCA. This includes the development and implementation of all protocols, policies and procedures under which the EMS agencies and personnel operate within the MCA. These apply to the training, triage, treatment and transportation of patients cared for within the MCA, including trauma patients. Although developed locally or regionally, all protocols must be reviewed and approved by the state Quality Improvement Task Force of the EMS Coordination Committee. This has led to more consistency and commonality in patient care protocols among the MCAs. Additionally the EMS Section has recently provided a set of model EMS protocols for local MCAs to adopt or mirror. Those model protocols include the management of the trauma patient.

The MCA is also responsible for identifying the EMS medical director for the system. The qualifications of a medical director are outlined in Part 209 of the Public Acts of 1978 as

amended. It has been suggested that the qualifications of the EMS medical director be expanded as outlined in Appendix A. Attendant with the increased qualifications come increased roles and responsibilities.

On-line medical oversight is provided at the local level, generally by the hospital to which the patient is being transported. Frequently, the communication from the field is simply to inform the ED of the patient's impending arrival. Those reports are often received by nursing personnel. The emergency physician on duty usually handles requests for specific on-line medical direction. There are no specific requirements for training of those providing on-line medical direction. Each local MCA is responsible for overseeing that component of the system. The state trauma system, working through the Lead Agency, will define qualifications, roles and responsibilities for those providing on-line direction.

TIERED TRIAGE

- **Current Status of Trauma Patient Triage**

Currently trauma patient triage protocols vary by each Medical Control Authority in Michigan.

- **Discussion of Desired System**

It is Michigan's desire to develop an all-inclusive trauma system throughout the state. This type of system allows for the inclusion of all injured patients into a system of health care providers in the out-of-hospital and hospital environments who are well trained and equipped to care for those injured patients of any severity. It allows for hospitals to participate in the system to the extent (level) that they are willing to commit the resources necessary for the appropriate management of the injured patient. It also ensures that all injured patients are part of the system of coordinated care, based on level of injuries and care required.

Tiered triage protocols will enable the trauma system to identify those severely injured patients who require the resources of sophisticated Regional Trauma Research or Regional Trauma Centers as well those patients who are appropriately cared for in Community Trauma or Trauma Support facilities. This avoids over taxing the Regional Trauma Research or Regional Trauma Centers and ensures the inclusion of Community Trauma and Trauma Support Facilities in the system. It is understood that, for the benefit of the trauma patient, there will be some over triage of patients to the higher level centers while minimizing under triage of patients as much as possible. Review of the appropriateness of protocol compliance and over and under triage is the responsibility of the trauma Quality Improvement program at the regional level.

Major trauma patients requiring the resources of a Regional Trauma Research or Regional Trauma Center shall be identified by adult and pediatric field triage criteria established by the regional medical control authorities, under guidelines established and approved by the Lead Agency, based on the recommendations of the State Trauma Advisory Committee.

TRANSPORT

Michigan has a highly dedicated network of pre-hospital transport providers. There are over 27,000 licensed pre-hospital emergency care personnel throughout the state. There are 376 licensed ambulance companies that operate 3,087 licensed EMS vehicles in Michigan. These services operate under the direction of 65 local Medical Control Authorities.

Strategies to strengthen the existing ambulance to hospital transportation system and ongoing mechanism for evaluation include:

- Improved communication and data sharing;
- Emphasize including all trauma patients and inclusive system;
- EMS rules reinforcing data collection issues;
- Disconnect with prehospital and hospital QI programs;
- The provision of feedback to EMS agencies;
- Lack of support for EMS agencies to attend trauma system educational programs and QI meetings;
- Standardization of a pre-hospital data set or collection; and
- Enforcement of the need for more consistent EMS data and mechanism to share it.

RECOMMENDATION 4 Implement an “All-Inclusive” Trauma System

Michigan shall implement an “all-inclusive” trauma system throughout the state. This type of system allows for the inclusion of all injured patients in a system of health care providers in the out-of-hospital and hospital environments who are well trained and equipped to care for those injured patients of any severity. It allows for hospitals to participate in the system to the extent (level) that they are willing to commit the resources necessary for the appropriate management of the injured patient. It also ensures that all injured patients are part of the system of coordinated care, based on level of injuries and care required.

RECOMMENDATION 5 Implement Tiered Triage Protocols

Major trauma patients requiring the resources of a Regional Trauma Research Center or Regional Trauma Center shall be identified by adult and pediatric field triage criteria established by the regional medical control authorities, under guidelines established and approved by the Lead Agency, based on the recommendations of the State Trauma Advisory Committee.

Tiered triage protocols will enable the trauma system to identify those severely injured patients who require the resources of sophisticated Regional Trauma Research Center or Regional Trauma Center, as well those patients who are appropriately cared for in Community Trauma Facility or Trauma Support Facility. This avoids over taxing the Regional Trauma Research or Regional Trauma Centers, and ensures the inclusion of Community Trauma and Trauma Support Facilities in the system.

D. Definitive Care Facilities

The optimal care of traumatically injured patients require facility resources above those typical of an acute care facility not providing around the clock care for this resource intensive population. It is critical that once a seriously injured patient has been identified in the pre-hospital setting, that the patient is assessed, triaged and transferred to a facility with the appropriate resources to definitively care for their injuries. The responsibility of the State Trauma System will be to assess the trauma resources of acute care facilities in the state (resource verification) and evaluate inter-facility transfers.

Regionalization of trauma care will be critical to the success of this process. Ideally, all acute care facilities in the state would play an identified role in an inclusive trauma system. Each facility has a role in providing a tiered response to meet the needs of injured patients, and regional configuration shall reflect the individual needs of the community it serves.

The American College of Surgeons Committee on Trauma (ACSCOT) has identified the following service levels of trauma centers that are based on a number of factors, including resources and location.

Level-1: A Level-1 trauma center is a lead hospital that is designated as a regional resource leader within a service area and generally serves large cities or population-dense areas. An institution at this level must be able to manage large numbers of injured patients with a certain severity level of injury. In addition, a Level-1 center is expected to conduct trauma research and be a leader in education, prevention, and outreach activities.

Level-2: A Level-2 trauma center provides comprehensive trauma care in two environments: (1) a population-dense area where this facility supplements the clinical activity and expertise of a Level-1 center; and (2) a less population-dense area where the facility serves as the lead trauma facility for a geographic area when a Level-1 institution is not geographically close. A Level-2 center serving a less populated area also must have an outreach program that involves smaller institutions in its service area.

Level-3: A Level-3 trauma center must have continuous general surgical coverage, must be capable of managing the initial care of the majority of injured, and must have transfer agreements with other trauma hospitals for patients that exceed its patient care resources. A Level-3 trauma center must be involved in prevention and have an active outreach program for its referring communities. In addition, the center must conduct education programs for nurses, physicians, and allied health care workers involved with trauma.

- **Current Status of Trauma Centers in Michigan**

As of October 2003, Michigan has a total of 14 American College of Surgeons (ACS) verified Level-1 and Level-2 trauma centers. All of these trauma centers are located in the southern portion of the state. Trauma care delivery is disproportionate within the state, leaving several areas in northern and upper Michigan without efficient trauma care resources for patient care delivery. Michigan does not have a single ACSCOT-verified trauma center in the Upper Peninsula or in the northern Lower Peninsula. In addition there are no air ambulance services based in the Upper Peninsula.

Since 1991, many voluntary, non-profit organizations have organized and coordinated Michigan's trauma care providers to identify issues; collect data; conduct research; monitor resources and regional systems; develop consensus on statewide system needs, facility verification, prehospital and transfer protocols, data collection systems and training; secure

member and grant support; and, organize the voluntary testing of trauma systems at the regional level. The structure used voluntary medical control regions to monitor and support optimal trauma care with medical control oversight.

In March 2002, the Department of Consumer & Industry Services completed a survey that focused on state and local efforts to coordinate trauma care delivery. Completing the survey helped identify deficiencies in the delivery of trauma care to Michigan's residents and emphasized the need for a well-planned trauma care delivery system. Significant observations include the lack of legislative authority to design a trauma system including the establishment of trauma center standards, development of a trauma center verification process, designation of trauma centers, and establishment of a statewide trauma registry. The survey also noted the lack of funding to support a statewide trauma system. The significant role of the medical control authorities in providing oversight of the delivery of care to trauma patients in Michigan was also noted in the survey.

The current ACSCOT-verified trauma centers exist due to the efforts of the individual hospitals. The hospitals are totally responsible for the operation and maintenance of the trauma centers. The demands on and the needs of a Level-1 or Level-2 trauma center are great and the center requires enormous resources and a minimum population density to support it.

- **Designation of Definitive Care Facilities**

Trauma care facilities in Michigan should be integrated into a system or network of definitive care facilities in order to provide a continuum of care for all injured patients that allows for the best and most timely match of a facility's resources with a patient's needs. To accomplish this integration, the Lead Agency shall designate all Michigan's definitive care facilities into one of the four categories shown below. All trauma care facilities would, at a minimum, have a basic emergency medicine capability and may be hospital based or free standing facilities.

1. Regional Trauma Research Center – This level of facility would correspond directly with the “Level I” trauma facility as defined in the most current edition of the ACSCOT publication “Resources for Optimal Care of the Injured Patient”.
2. Regional Trauma Center– This level of facility would correspond directly with the “Level II” trauma facility as defined in the most current edition of the ACSCOT publication “Resources for Optimal Care of the Injured Patient”.
3. Community Trauma Facility– This level of facility would be similar to the “Level III” trauma facility as defined in the most current edition of the ACSCOT publication “Resources for Optimal Care of the Injured Patient” and adopted by the lead agency.
4. Trauma Support Facility (TSF) – This level of facility should be created by the Lead Agency to provide initial emergency stabilization of a patient, in preparation for expeditious transfer to a Regional Trauma Research Center, Regional Trauma Center, or a Community Trauma Facility, depending on the highest level of care available for that region. It is not expected that patients would receive definitive care at TSF's, nor would patients be transported to a TSF if there were a higher-level facility within the area. Standards for TSF verification would be developed by the Lead Agency. Facilities verified as TSF's would also be designated trauma receiving facilities within their respective regional system and the overall State Trauma System.

- **Verification of Definitive Care Facilities**

The identification, verification of capabilities and designation of trauma receiving facilities in Michigan is essential to creating an integrated and inclusive trauma system. The process of designation of acute care facilities to receive trauma patients first requires the identification of appropriate facilities and the verification of the clinical resources and commitment of these facilities to the provision of optimal trauma care.

The Lead Agency shall designate the existing trauma resources of all hospitals in the state, based upon the following four categories:

- a) For a Regional Trauma Research Center, the most current verification criteria established by the American College of Surgeons Committee on Trauma (ACSCOT) for level I trauma centers;
- b) For a Regional Trauma Center, the most current verification criteria established by the ACSCOT for level II trauma centers;
- c) For a Community Trauma Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level III facilities.
- d) For a Trauma Support Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level IV facilities.

The Lead Agency may modify the criteria or establish additional levels of trauma care resources as appropriate to maintain an effective state trauma system and protect the public welfare.

The resources of hospitals applying for Regional Trauma Research Center or Regional Trauma Center designation status shall be verified by the ACSCOT. Verification of these facilities in Michigan shall be based on formal assessment of the facility by the American College of Surgeons through the Trauma Center Verification Program and based on the guidelines published in the most current edition of the ACSCOT publication “Resources for Optimal Care of the Injured Patient”. Regional Trauma Research Center and Regional Trauma Center facilities would be responsible for the cost of the ACSCOT Verification Process.

Hospitals seeking designation as either a Community Trauma Facility or Trauma Support Facility shall be verified using an “in-state” process as established by the Lead Agency, with the advice of the State Trauma Advisory Committee. The Lead Agency shall be responsible for verifying these facilities utilizing ACSCOT or similar appropriate standards developed in cooperation with the State Trauma Advisory Committee and appropriate professional organizations such as the Michigan Trauma Coalition, and the Michigan Chapters of the American College of Emergency Physicians and American College of Surgeons Committee on Trauma. These standards would be approved by the Lead Agency for utilization in the verification assessment of these facilities.

All facilities in Michigan would thereby be identified at some level of participation in the state trauma system, thus producing a true inclusive system.

No volume criteria are currently recommended for any level of trauma care facilities in Michigan. Many of these facilities are in geographic areas where they are the sole provider of acute care for the area. It would be the responsibility of the State Trauma System to decide on designation standards based on current community need for acute trauma care.

Trauma specialty centers (burn, pediatric, rehabilitation) would be identified within the State Trauma System and where geographically appropriate, would coordinate appropriate transfers of patients to those facilities for further care. Where available, verification of specialty centers would occur. Designation of these facilities would occur once verification has been completed. The State Trauma System shall require a coordinated access point for facilities wishing to transfer an injured patient into a trauma specialty center.

- **Periodic Re-Designation of Trauma Care Facilities**

Currently, ACSCOT verification is for a period of three years and designation would follow this time frame. Community need would be reassessed at the time of re-application for designation to determine any change in the need for trauma center designation.

Designation of trauma centers, a political process rather than clinical process, would be based on the outcomes of the verification process by the ACSCOT (for Regional Trauma Research Center and Regional Trauma Center) and the Lead Agency (for Community Trauma or Community Support facilities). Community need, geographic area of service and total trauma patient volume for a service area are appropriate factors for the Lead Agency to consider when determining the number of designated trauma facilities needed in a regional trauma service area. Initially all verified facilities would become designated trauma receiving facilities until community and geographic need can be assessed.

Under the oversight of the Lead Agency and the State Trauma System, monitoring of designated trauma centers would be overseen by the State EMS/Trauma Medical Director and State Trauma Program Manager, in conjunction with a review of patient care data submitted to the State Trauma Registry. A periodic review of select trauma patient data would be submitted to the state for analysis as outlined in the section on Trauma Registry and Quality Improvement. All verified centers would be required to maintain verification in order to remain a designated state trauma facility. At the time of re-verification and re-designation, the Lead Agency and State Trauma System will notify the trauma facility of the need for documentation of the facility's continued interest in participating in the State Trauma System and proof of continued verification of their clinical capabilities by the mechanisms as previously outlined. Re-designation would then follow based on assessed need at the time based on the Lead Agency and State Trauma System analysis.

- **Inter-facility Transfer**

The Lead Agency and the State Trauma System will identify the cohort of patients that represent a state trauma facility patient. The goal of optimal care of these patients is to get the patient to the highest level of care available in the shortest duration of time for optimal outcomes. Once a patient has entered the system, a receiving facility would transfer the patient to the highest level of care if they are not the appropriate facility for that patient. A centralized number for transferring patients shall be developed at each trauma receiving facility to expedite the patient's access to the higher level of care. Designated centers would have the obligation to accept patients being transferred for a higher level of care.

Communication linkages may take the form of telephone, cellular phone, or web based technology, but in all instances, should be physician-to-physician for accurate communication of the patient's clinical needs. A centralized, statewide transfer access phone number shall be developed in all trauma-receiving facilities for expedited patient access to care.

Once a patient becomes medically stable, in the opinion of the treating trauma physician, and no longer meets criteria as a trauma patient, it may be appropriate for transfer of the patient back to

their community. The transfer of these medically stable patients back to the community facility will be at the discretion of each trauma facility.

Trauma patients needing the resources of specialty care facilities will, by prior transfer agreement between the facilities, be transferred to meet their need if in the medical opinion of the facilities this will benefit the patient. Centralized transfer mechanisms and physician-to-physician contact will be required before a patient can be transferred.

- **Medical Rehabilitation**

Initially, an inventory of available rehabilitation facilities will be performed based on capability of these facilities. The transfer of patients to rehabilitation will be by prior written agreement of the rehabilitation facility to accept appropriate patients to their resources and as appropriate for their clinical condition at the time of the intended transfer. Centralized processing of the transfer and direct physician-to-physician contact will be required for transfer of patients.

To identify available resources, the Lead Agency and State Trauma System will perform an inventory of available resources and categorize them by credentialed institutions and specialty. This information will then be made available to the designated trauma facilities of the state for development of formal transfer agreements between sending and receiving facilities.

Rehabilitation facilities and trauma receiving facilities will develop pre-existing transfer agreements to expedite the smooth flow of patients from acute care to rehabilitation.

RECOMMENDATION 6 Designation and Verification of Trauma Facilities

The Lead Agency shall designate the existing trauma resources of all hospitals in the state, based, upon the following four categories:

- a) For a Regional Trauma Research Center, the most current verification criteria established by the American College of Surgeons Committee on Trauma (ACSCOT) for level I trauma centers;
- b) For a Regional Trauma Center, the most current verification criteria established by the ACSCOT for level II trauma centers;
- c) For a Community Trauma Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level III facilities.
- d) For a Trauma Support Facility, verification criteria shall be established by the Lead Agency, with the advice of the State Trauma Advisory Committee and based upon relevant ACSCOT criteria for level IV facilities.

The Lead Agency may modify the criteria or establish additional levels of trauma care resources as appropriate to maintain an effective state trauma system and protect the public welfare.

The resources of hospitals applying for a Regional Trauma Research Center or Regional Trauma Center designation status shall be verified by the ACSCOT. Hospitals seeking designation as either a Community Trauma Facility or Trauma Support Facility, shall be verified using an “in-state” process as established by the Lead Agency, with the advice of the State Trauma Advisory Committee.

RECOMMENDATION 7 Timeframe for Verification

The Lead Agency shall verify the trauma care resources of all hospitals in Michigan over a three-year period.

RECOMMENDATION 8 Designation of Trauma Facilities

The Lead Agency shall designate the trauma capabilities of each hospital on the basis of a verification process and recommendations made by each Regional Trauma Network.

RECOMMENDATION 9 Periodic Re-Designation of Trauma Facilities

The Lead Agency shall establish a mechanism for periodic re-designation of all hospitals.

E. DATA COLLECTION AND TRAUMA SYSTEM EVALUATION

Critical to the success of the trauma system to improve morbidity and mortality of injured patients is the ability to identify those severely injured patients who require the resources of sophisticated Regional Trauma Research Center or Regional Trauma Centers, as well those patients who are appropriately cared for in Community Trauma Facility or Trauma Support Facility. This avoids over taxing the Regional Trauma Research Center or Regional Trauma Centers and ensures inclusion of Community Trauma Facility or Trauma Support Facilities in the system. It is understood that, for the benefit of the trauma patient, there will be some over-triage of patients to higher level centers while minimizing under-triage of patients as much as possible. Review of the appropriateness of protocol compliance and over and under triage is the responsibility of the trauma QI program.

- **System Data Requirements**

The evaluation and assessment of an effective trauma care system at the state-level requires the ongoing monitoring of regional trauma networks reports concerning trauma deaths preventability, complications, injury data analyses. The process will also include analysis of the state trauma registry, development of a state performance improvement plan with standard audit filters, process reviews and outcome analysis of the trauma system. Each MCA in Michigan shall participate in a Regional Trauma Network, and adopt and implement Regional Trauma Network Performance Improvement Plan and protocols as developed by the Regional Trauma Network and approved by the Lead Agency. This will be reflected in the overall performance improvement plan at the state, regional, local and hospital level.

A state trauma system requires data for evaluation and justification of the system design. The most likely source for data will come from the trauma centers and hospitals throughout the state. Trauma centers maintain trauma specific data about event and cause, pre-hospital care, hospital care, and discharge status. Data shall be abstracted, coded and evaluated by a trauma registrar and recorded within trauma registry computer software applications. The data shall be used to evaluate both hospital and system processes, and the outcomes of care delivered to the patients. Basic outcome measures (mortality, morbidity, and timeliness of procedures) assist the system in identifying system and provider problem areas that affect the overall patient care. The system then can implement changes and measure outcomes with the goal of improving patient care and optimizing patient outcomes.

The patient population used to identify the trauma patient should be the definition provided by the American College of Surgeons, Resources for Optimal Care of the Injured Patient: 1999. The trauma patient is defined via the Health Information injury coding system ICD-9 code 800-959.9 to be all inclusive of injury diagnoses.

A Data Dictionary that clearly defines the data items and source documentation or point of data collection will ensure uniformity of data for system evaluation and comparisons.

Ideally trauma data should first be uploaded to a regional data repository. Next, unique patient identifiers should be deleted from the patient data to protect patient confidentiality. A regional trauma registrar will then review the data and provide feedback to the hospital trauma registrar regarding errors, incomplete records or conflicting data. A standard data verification process will allow hospitals to measure the validity of their data.

Data transfer from a hospital registry to a regional registry shall be timely but not burdensome. All hospitals and emergency centers shall be expected to participate in data submission. The Regional Trauma Registrar shall oversee the transfer of data from all facilities within a defined region.

Performance improvement patient confidentiality protection shall be provided and maintained via existing Public Health Act Codes or new trauma system legislation.

Each regional registrar shall generate regional reports. Data shall be used for performance improvement and system evaluation measures. Once the data has met standard criteria for validation it should be transmitted to the State Trauma Data Registry. At this level the aggregate data shall be used to generate additional statewide demographic and system evaluation reports.

Pre-hospital providers will work with hospitals to supply missing or incomplete data prior to the hospital data transfer process. In cases when more than one agency is used to transport a patient, the receiving EMS agency will provide the data to the hospital of definitive care. Data should be used to survey specific injury types such as traumatic brain injuries, spinal cord injuries, and acute inpatient rehabilitation vs. outpatient rehabilitation.

In addition to EMS and hospital data, other existing databases may be of value to a comprehensive data collection effort. Utilizing existing databases, such as the hospital discharge data, death certificates, county coroner autopsy reports, police reports, insurance information, and financial data, should eventually be evaluated and linked to the state trauma data system where appropriate.

- **Data Collection Tools/Current Status**

Trauma patient data collection is a requirement for Michigan hospitals that are currently American College of Surgeons (ACS) verified trauma centers. The requirement for a trauma registry is essential for Level-I and Level-II status. There are smaller hospitals throughout the state that currently maintain a trauma registry or have participated in regional reporting of trauma patient data. Currently Michigan hospitals are using two different commercial software applications, the American College of Surgeons (ACS) NATIONAL TRACS[®] and Clinical Data Management (CDM) Trauma Base. Large trauma centers in Michigan have been collecting data for several years. Some trauma registries have been in existence for more than 10 years. Both applications are compatible with the ACS NATIONAL TRACS[®] National/State/Regional software. This computer application allows for the uploading of data from individual hospitals or sites. Data can also be imported from existing databases to create new patient records or

amend existing records. The download process has been tested and reports generated previously under the direction of a collaborative project.

Software programs currently in use allow for individual hospital modifications and have options that block patient and hospital sensitive data from the download process. The receiving application also has a built-in safety feature that encrypts confidential data making this a second level of protection.

NATIONAL TRACS[®] is a database to enable individual trauma center data and state data to contribute to a national trauma database center of the American College of Surgeons. This data will enable benchmarking, promoting a useful tool for centers and states to measure performance improvement in trauma care at various levels. Reports from NATIONAL TRACS can be saved in formats compatible to common statistical analysis software applications.

RECOMMENDATION 10 Hospital Participation in Data Collection

All hospitals and emergency centers shall be expected to participate in data submission.

RECOMMENDATION 11 Confidentiality of Trauma Data

The confidentiality and protection of patient data collected as part of Trauma System performance improvement activities shall be provided and maintained through existing state legislation included in the Public Health Act Code.

RECOMMENDATION 12 Phase in of Data Collection Systems

The comprehensive data collection system shall be phased in over a five-year period:
Year 1 – Establish regions, define data dictionary, and define the data download and data verification process. Establish regional and state committee structure. Download all ACS verified trauma center data to a regional trauma registry. Generate reports and evaluate uniformity of data.

Year 2 – Work towards uploading regional data to state registry. Identify all hospitals for data submission. Establish a data collection process for non-trauma centers. Initial evaluation of regional data by regional committees and upload the data to the state trauma registry.

Year 3 – Develop annual reports using regional and state data defined by the State Trauma Data Oversight Committee. Assess the state trauma system and Regional Trauma Network.

Year 4 – Expand the trauma data collection system to include all participation hospitals.

Year 5 - Evaluate and import additional data from existing databases on a needs basis.

RECOMMENDATION 13 MCA Performance Improvement Plans

Each Medical Control Authority shall adopt and implement a Regional Trauma Network Performance Improvement Plan and protocols as developed by the Regional Trauma Network and approved by the Lead Agency.

RECOMMENDATION 14 Evaluation of System Performance

A plan for evaluating individual trauma system components and system operations, including the responsibility or monitoring compliance with standards, maintaining confidentiality and

periodic review of trauma facility standards will be developed by the Lead Agency, with the advise of the State Trauma Advisory Committee.

RECOMMENDATION 15 Evaluation of System Effectiveness

A plan for assessing the effectiveness of the system as it relates to meeting the needs of injured persons, availability of appropriate resources, and costs will be developed by each Regional Trauma Network and approved by the Lead Agency, with the advise of the State Trauma Advisory Committee.

F. PUBLIC INFORMATION, EDUCATION AND PREVENTION

• **Public Information and Education**

The Lead Agency shall develop a plan to heighten public awareness of injury as a public health problem, to promote injury as an entity amenable to injury control countermeasures, to explain the need for a Trauma System, to describe how the Trauma System operates and how the system can be accessed. This plan is being developed as part of the “Implementation Plan”.

The Lead Agency shall establish a trauma constituency to promote trauma system awareness and prevention activities. This plan is being developed as part of the “Implementation Plan”.

The Lead Agency shall develop a plan to educate elected officials and staff about trauma system issues. This plan is being developed as part of the “Implementation Plan”.

• **Prevention**

Since 2000, the State of Michigan has attempted to coordinate and consolidate the many injury prevention programs and activities through the development of a State Injury Prevention Plan. A summary of the Michigan Injury Prevention Plan is attached to this report as **APPENDIX B**. The purpose and scope of this initiative is to improve the statewide collection of injury data, enhance access to that data, identify and prioritize injury problems in the state, and encourage and support coordinated efforts to address those priorities. The Michigan Trauma Coalition has been an active participant in this project.

The trauma system data collection, analyses, and programming shall be coordinated with the State Injury Prevention Plan.

RECOMMENDATION 16 Trauma Injury Prevention Planning

The Lead Agency shall work with the Michigan Department of Community Health’s Childhood and Unintentional Injury Prevention Section (IPS) to ensure the coordination and integration of all state injury prevention initiatives and programs.

G. HUMAN RESOURCES

The human resource needs associated with this trauma systems plan for Michigan include:

- Leadership:

The system requires administrative and clinical leadership, authority, planning and development, legislation and finances. As recommended by the Michigan Statewide Trauma Care Commission, the Section of Emergency Medical Services within the Department of Community Health shall provide administrative direction of the statewide trauma system. Additional personnel will be required to support the administration of the trauma system.

The State EMS/Trauma Medical Director should have responsibility for oversight of both the regular EMS activities and for trauma system activities. This individual shall have both clinical and administrative experience in EMS and trauma care and the physician shall be board certified in either Surgery or Emergency Medicine. A State Trauma Program Manager shall be appointed to assist the Medical Director in the clinical, administrative and quality assurance priorities of the State Trauma System. This individual shall be a Registered Nurse with a minimum of a Bachelor's Degree, preferably a Master's Degree in Nursing with experience in trauma. A State Trauma Registrar shall coordinate the collection of regional trauma data to allow evaluation of quality and outcomes on a state basis. The Registrar shall also interact with national organizations to allow comparisons of Michigan's trauma care performance with national benchmarks of trauma care.

Initially, the Division of Emergency Medical Services shall be staffed with:

- a) One part-time *State EMS/Trauma Medical Director* to provide medical oversight for both the trauma care and pre-hospital care;
- b) One full-time *Trauma Program Manager* to administer the functions assigned to the Division;
- c) One full-time *State Trauma Registrar* to coordinate the collection of regional trauma data to allow evaluation of quality and outcomes on a state basis; and
- d) One full-time *administrative support* position.

Additionally, the State Trauma Advisory Committee shall be created to provide guidance to the State Trauma System. This Committee shall be comprised of appropriate representatives from the pre-hospital, physician, nursing, administrative and governmental organizations appropriate to trauma care.

- System Development:

The effectiveness of a Trauma System depends on its integration within the emergency medical services (EMS) system and other relevant subcomponents. Planning for trauma system implementation requires consideration of the additional responsibilities the trauma system will place on existing EMS components such as local medical control authorities, pre-hospital agencies and personnel, communication networks, referral hospitals and receiving hospitals.

The Trauma System shall include *Eight Regional Trauma Coordinators* (8) to assist each region in coordination of Medical Control Authorities, coordinating the regional modifications to state trauma triage protocols, establishing inter-facility agreements, development of trauma center standards, coordinate the regional data collection and QI activities, and integrate trauma system activities with related initiatives in Bioterrorism response and EMS.

- Pre-hospital care:

Funding for each MCA is needed for *MCA staff support* to assist medical control authorities with the implementation and maintenance of the trauma system, including development of destination protocols, establishment of inter-facility transfer agreements, data collection for the statewide trauma registry, and regionalization of medical control functions where applicable.

- Definitive hospital care:

The Lead Agency shall have a full-time analyst to coordinate the designation and verification of trauma centers. The *Verification and Designation Analyst* shall report to the State Trauma Program Manager. Responsibilities shall include coordinating trauma center designation process, verification activities, and development of an appeals mechanism.

- Data Collection and Trauma System Evaluation:

Human resources required for this component of a Statewide Trauma System include:

State Trauma Registrar (same person as listed above under “leadership”) – Validates individual hospital reports, provides feedback to hospitals and regional Trauma Registrars. Oversees the data process and documentation, collaborates with the Database Manager to provide accurate aggregate data to administration, hospitals, National Trauma Databank and the general public.

State Database Manager – Develops and maintains trauma data through the upload process and web-enhanced process. Responsible for the data linkage to other related databases. Generates hospital data validation reports that shall include completeness of data, patient records with errors. Works collaboratively with the State Trauma Registrar.

Regional Trauma Registrar (part of Regional Trauma Coordinator job listed above under “System Development”) – Promote, educate, evaluate and communicate State and Regional Trauma Registry process to ensure quality of the data. Work as a resource to trauma centers, assist in trauma registrar orientation, provide software training, report feedback to hospitals regarding data submitted, work with small hospitals in data collection/AIS coding. Work as the liaison between regional EMS agencies and hospitals to ensure hospitals receive timely data. Monitor and identify system problems regarding data.

6) Public Information, Education and Prevention:

No new staff are being recommended for this component of the trauma system at this time. The Michigan Department of Community Health’s Childhood and Unintentional Injury Prevention Section (IPS) is currently responsible for the coordination and integration of all state injury prevention initiatives and programs.

Trauma Education Preparation

Currently in Michigan:

- There are 11,700 Medical First Responders (MFR); 10,700 Emergency Medical Technicians (EMT); 1,500 Emergency Medical Technician – Specialists (EMT-S); 6,600 Paramedics; and 850 EMS Instructor/Coordinators.
- There are 770 pre-hospital provider agencies including: 390 Medical First Responder agencies; 175 Basic-EMT agencies; 20 Limited Advanced Life Support agencies; and 187 Advanced Life Support agencies.
- There is no mandated trauma training for any level of health care providers

- There are Basic Trauma Life Support and Pediatric Trauma Life Support programs available for pre-hospital providers; TNCC for nurses; ATCN for nurses; and ATLS for docs.

There are multiple educational opportunities available in select areas of the state including ATLS, ATCN, TNCC and Pre-hospital Education. The challenge that must be met is to bring these educational opportunities to areas of the state not currently served by access to these programs. Professional organizations such as the American College of Emergency Physicians and the American College of Surgeons provide support at the state level for professional education for trauma care professionals.

At the regional and local level, sub-specialist physician support is critical to the provision of optimal trauma care. An assessment of critical sub-specialist need shall be conducted by the Lead Agency and a recommendation made for methods to improve support of sub-specialists in areas of greatest clinical need. Trauma facilities receive a disproportionate share of under- and un-funded patients and cannot be expected to meet the needs of these resource intensive patients without additional support from governmental and payer sources. Trauma care provision should be carved-out of existing managed care contracts to allow for more appropriate reimbursements of the higher costs incurred by the facilities making the commitment to these patients 24 hours per day.

Michigan currently lacks accurate information about:

- A. The number of personnel, by caregiver type, needing basic trauma education and those needing supplemental trauma education to augment current level of knowledge/skills.
- B. Mechanisms in place for continuing education in trauma care - BTLS / PHTLS / TNCC
- C. The current hospital personnel resources (physician, nurse and other health care professionals) and education levels of personnel required to care for all injured persons.
- D. Additional pre-hospital and hospital resources necessary to meet trauma patients' needs.
- E. Deaths that are objectively eligible for organ donation transplants (Gift of Life Michigan).

An accurate assessment of the needs of trauma care personnel will require a needs-assessment by the Lead Agency in developing the State Trauma Program. This assessment shall address:

- a) The needs required to support of the infrastructure of the trauma system, specifically of the Regional Trauma Networks and Medical Advisory Committees making up these Regional Networks; and
- b) Develop strategies for securing needed personnel including
 - Address reimbursement for EMS agencies and hospitals – negotiated rule making / third party reimbursement issues
 - Consider alternate health care providers – additional roles for medics
 - Using EMS personnel in Emergency Departments during downtime
 - Recruitment, retention and retraining – maintaining competency
 - Overcome mindset of EMS as dead end job

It is quite likely that additional resources will be needed for public education efforts to reduce the preventable death and injury caused by trauma on a daily basis in Michigan.

Prevention and Public Education

Because traumatic injury is a preventable disease, additional support of Prevention and Public Education efforts of the State Trauma System and individual Trauma Facilities is important for the optimal treatment of all trauma patients and the reduction of preventable traumatic injury.

Outreach efforts by the State Trauma System Staff and all trauma care providers will be required to bring new practitioners into the state trauma system. Support of regional education in the areas of pre-hospital, nursing and physician trauma care will be essential to the success of an inclusive Trauma System.

RECOMMENDATION 17 Trauma Systems Staffing Requirements

The Lead Agency and all supporting components of the state trauma system must be adequately staffed to carry out its responsibilities and functions. Human resources required by the proposed state trauma system include the following positions:

- State EMS/Trauma Medical Director at 0.5 FTE
- Trauma Program Manager at 1.0 FTE
- State Trauma Registrar at 1.0 FTE
- State Database Manager at 1.0 FTE
- Administrative support at 1.0 FTE
- Eight Regional Trauma Coordinators at 1.0 FTE each
- Regional Trauma Registrars at 0.5 FTE each
- MCA staff support at the local level

RECOMMENDATION 18 A Trauma Systems Education Plan

The Lead Agency shall conduct an accurate assessment of the training and education needs of trauma care personnel in the State.

H. LEGISLATION

Legislative Activities

As a part of the Implementation Plan, State Trauma System legislation will be developed and introduced for consideration and adoption by the State Legislature.

Key provisions to be included in trauma system legislation will be identified as part of the implementation planning process. The legislation will ensure authorization for allocation of sufficient resources to cover cost of trauma system administration and operations.

The Trauma System Implementation Plan also will:

- Identify potential funding sources to support the trauma system.
- Develop a mechanism for documenting the costs of trauma care in Michigan.

I. FINANCE

Financing the Provision of Trauma Care Services

Currently, Michigan trauma centers exist due to the substantial, voluntary efforts of the individual hospitals. These hospitals are fully at financial risk for the operation and maintenance of the trauma centers. The Trauma Care Commission reported that the demands on, and the needs of, a trauma center are great and require significant resources beyond those of a non-trauma center acute care facility and a minimum population density that can support it. Reimbursement by insurance companies for trauma care, based on CPT codes and broad-based contracts with hospitals and physician groups, does not take into account the 24-hour-a-day standby status required for trauma centers or the limitations on the use of such trauma dedicated resources.

In addition, the Commission's report found that trauma care often represents a significant portion of the total un-reimbursed care for all providers. Three major factors responsible for uncompensated costs are the high costs of trauma care, the high percentage of trauma patients who are uninsured and declining levels of reimbursement. It is estimated that the cost of admission for a trauma patient is three or more times greater than that for the average acutely ill patient. The majority of trauma patients are young, at high risk for injury, and have little or no health care insurance. Trauma centers located in urban areas receive a disproportionate number of trauma patients with lower socio-economic backgrounds, decreased insurance rates, and increased unemployment rates. However, it has been clearly shown by research in established trauma systems, that organized systems of trauma care both save lives and are more cost efficient in the delivery of trauma care than in areas without such systems of trauma care delivery.

Once established, Michigan's trauma care system should develop a mechanism for documenting costs, in particular un-reimbursed costs, associated with trauma system operations including: pre-hospital care, hospital care (all levels of trauma care facilities), physician services, and under-compensated and un-compensated care. Once identified, the Lead Agency should identify potential funding sources for all areas of un-reimbursed trauma care.

A. Leadership Expenses

The system requires administrative and clinical leadership, authority, planning and development, legislation and finances. As recommended by the Commission, the Division of Emergency Medical Services within the Department of Community Health shall provide administrative direction of the statewide trauma system. Additional personnel will be required to support the administration of the trauma system.

Initially, the Division of Emergency Medical Services shall be staffed with a part-time EMS/Trauma Medical Director to provide medical oversight for both trauma and pre-hospital care, a full-time Trauma Program Manager to administer the functions assigned to the Division, one full-time State Trauma Registrar to coordinate the collection of regional trauma data to allow evaluation of quality and outcomes on a state basis, and one full-time administrative support position. Estimated costs associated with developing the administrative framework for the trauma system include the following:

B. System Development/Management Expenses (including Pre-Hospital)

The effectiveness of a Trauma System depends on its integration with the emergency medical services (EMS) system and other relevant subcomponents. Planning for trauma system implementation requires consideration of the additional responsibilities the Trauma System will place on the existing EMS components such as local medical control authorities, pre-hospital agencies and personnel, communication networks, referral hospitals and receiving hospitals.

Essential to the development and coordination of an effective statewide trauma system in Michigan is enhancement of the role of the medical control authorities. Funding is needed to assist medical control authorities with the implementation and maintenance of the trauma system, including development of destination protocols, establishment of interfacility transfer agreements, data collection for the statewide trauma registry, and regionalization of medical control functions where applicable.

C. Trauma Center Designation/Verification Expenses

Facilities shall be integrated into a system or network of definitive care facilities in order to provide a continuum of care for all injured patients that allows for the best and most timely match of a facility's resources with a patient's needs. Identifying and verifying the level of trauma care available in health care facilities in Michigan is essential to creating an integrated system. The ACS-COT has had extensive experience in evaluating individual trauma centers through its verification program.

It is recommended that the State Trauma System include facilities verified by the ACS-COT at Level I for Regional Trauma Research Centers, and at Level II for Regional Trauma Centers. Regional Trauma Research Centers and Regional Trauma Centers shall be verified by the American College of Surgeons. Facilities verified at these levels shall be designated as approved trauma centers in Michigan by the Lead Agency. The Division of Emergency Medical Services shall be responsible for implementing a process for verifying Community Trauma Facilities and Trauma Support Facilities.

Included in the cost estimate are the salary and benefits for a full-time analyst to coordinate the designation and verification of trauma centers, costs associated with verifying Community Trauma Facilities and Trauma Support Facilities, and general operating expenses. It should be noted that Regional Trauma Research Center and Regional Trauma Centers should continue to be responsible for the cost of the ACS verification process.

D. Trauma System Data Collection/Trauma Registry Expenses

The collection of data that can be used to evaluate the effectiveness and efficiency of the state's trauma system is critical to reducing the incidence of trauma and improving the delivery of trauma care in Michigan. For an effective trauma system, it is important to collect information from the pre-hospital system as well as from the designated trauma centers. It is recommended that the Lead Agency provide for consolidation of data collection from both systems.

The trauma system has three components that work together to provide patients with the required care including pre-hospital providers, emergency departments, and trauma providers. It is important that all providers in the trauma system are involved in the collection of trauma data. Designated trauma facilities shall be required to participate in the collection of data regarding the delivery of care in the hospital setting. Pre-hospital providers shall be required to participate in data collection efforts related to the care provided by EMS personnel. The Lead

Agency shall be responsible for collating, analyzing and distributing aggregate data regarding trauma delivery across the state.

E. Injury Prevention, Education and Training Expenses

Programs related to injury prevention are currently the responsibility of the Michigan Department of Community Health. During the past several years, the Michigan Department of Community Health's Childhood and Unintentional Injury Prevention Section (IPS) has used a Core Injury Capacity-Building Grant from the Centers for Disease Control and Prevention to develop a State Injury Prevention Plan for Michigan. In this context, it is recommended that trauma-related injury prevention activities be made an integral part of the current Department of Community Health's "State Injury Prevention Plan", and not be included as part of the initial trauma system budget.

Appendix A

Qualifications of EMS Medical Director

To optimize “off-line” medical direction of all out-of-hospital EMS, these services shall be managed by physicians who have demonstrated the following:

Qualifications:

- Michigan licensed
- Familiarity with the design, goals and operation of out-of-hospital EMS systems
- Experience or training in the out-of-hospital emergency care of the acutely ill or injured patient
- Experience or training in medical direction of out-of-hospital care providers
- Active participation in Emergency Department management of the acutely ill or injured patient
- Experience or training in the instruction of out-of-hospital personnel
- Experience or training in the EMS performance improvement process
- Knowledge of EMS laws and regulations
- Knowledge of EMS dispatch and communications
- Knowledge of skills, equipment, environment and functions of out-of-hospital emergency units.
- Successful completion of a State approved Medical Director’s Course

Because off-line trauma protocols have enormous impact, it is imperative that medical directors actively involved in EMS systems are participating in protocol development and evaluation.

Appendix B

Summary of Michigan's State Injury Prevention Plan

In October 2000, the Michigan Department of Community Health's Childhood and Unintentional Injury Prevention Section (IPS) received a Core Injury Capacity-Building Grant from the Centers for Disease Control and Prevention. States receiving this four-year grant award were required to prepare a state plan for injury prevention to guide their efforts in reducing injury-related deaths and disability. In November 2001, a group of 27 injury experts from throughout the state were convened to initiate work on a state injury prevention plan. Three meetings of the group were held. This Work Group reviewed injury data (e.g., mortality, hospitalizations and emergency department visits) and provided input on strengths, weaknesses and gaps in Michigan's current capacity for injury prevention and control. The Work Group also provided input on program priorities, collaborative relationships and outcomes for the state injury prevention program related to the five recommended core component areas: 1) infrastructure, 2) data collection, analysis and dissemination, 3) interventions: design, implementation and evaluation, 4) technical support and training and 5) public policy.

The IPS identified and recruited members for a 50-member Injury Prevention Task Force that met January 29 and February 27 of 2002. Building on the planning and analysis of the Work Group, the roles of the Task Force reviewed the gap analysis and priority setting exercises completed by the Work Group, to recommend specific actions to build the state's capacity for injury prevention and to develop final recommendations related to each of the five core component areas. The final product was the development of a three-year strategic plan with recommendations for building a comprehensive injury prevention and control program in Michigan.

The Task Force finalized and approved the plan in the summer of 2002.

Work Group Suggestions for Program Priorities: At its January 9, 2002 meeting, the Injury Prevention Work Group made the following initial suggestions related to the five core component areas of a model state injury prevention program. The Task Force refined these suggestions into recommendations with respect to responsibilities, timeframes and action steps. Where an agency outside MDCH was assigned responsibility, the Task Force made them aware that it must secure that agency's approval/commitment to include recommendations in the State Plan.

Data Collection, Analysis and Dissemination:

- Ensure that injury data are web-accessible and in a user-friendly, interactive format, specifically related to the top causes of injury mortality, injury hospitalizations and injury emergency department visits.
- Work with the Michigan Health and Hospital Association in a voluntary effort to improve access to hospital discharge data and to improve the completeness of E-coding in the Michigan Inpatient Database.
- Develop, publish and disseminate regular, comprehensive reports of injury data.
- Form a work group to examine the state's injury data infrastructure and related issues and to formulate a protocol or methodology for an analysis and dissemination plan.
- Maintain emerging data systems (MEDCIIN and uniform ME data system).
- Explore the use of sentinel event surveillance for selected causes of injuries.
- Develop 2010 injury objectives for Michigan.

Interventions – Design, Implementation and Evaluation:

- Publicize the best programming practices with proven effectiveness to address the leading causes of injury through one easy-to-access, updated web-site with established links
- Develop a formal mechanism to bring people together to focus on what works, what looks promising and how to network and collaborate. This could be a statewide conference, regional workshops or seminars on particular topics or skill-building.
- Identify and develop ways for the state and local organizations to collaborate on sharing and developing interventions, through strengthening existing injury prevention networks and working with injury grantees and local programs.
- Develop programming to address emerging injury prevention issues such as fall prevention, suicide and firearm-related injuries.
- Explore creative approaches for developing interest in injury prevention that will motivate and enable people to change their behavior (e.g., social marketing).

Technical Support and Training:

- Develop curricula and delivery mechanisms on specific injury prevention issues for physicians and other providers who can then educate and refer patients and clients.
- Build comprehensive, multi-faceted campaigns and conduct a series of conferences, workshops or seminars on specific injury prevention issues.
- Provide technical support and training to develop local capacity at two levels: 1) building community awareness and linkage to resources and 2) building skills in specific topic areas.
- Assemble or develop an injury prevention kit that contains fact sheets, information on interventions, networking guidelines, etc., for use by providers or the public.

Public Policy:

- Establish a focal point or clearing-house for injury prevention by having one central, well-known program serve as an information source for compilation of injury data and information on prevention programs, laws and research.
- Develop grassroots support for injury prevention programs, laws and research by establishing a statewide coalition with public and private partners.
- Develop an active communication system with local partners (list-serve) to share information on legislation related to injury (bill numbers only) and other time-sensitive information.
- Focus on identifying and publicizing the costs of injuries and prevention efforts.

Infrastructure:

- Strengthen and maintain the Michigan Department of Community Health Injury Prevention Section so that it can encompass the scope of unintentional and intentional injuries.
- Coordinate funding streams to local agencies for injury, modeled after the multipurpose coordinating bodies concept.
- Form a work group to identify contacts at state agencies and to assess their funding streams, policies, programs, data, etc., related to injuries.
- Create an easily accessible website that is linked with other injury websites.
- Strengthen existing state injury prevention networks through recruiting influential stakeholders and involving partners representing people who are most impacted.