

Health Priority: Intentional and Unintentional Injuries and Violence

Objective 4: Trauma System Development (Template)

Long-term (2010) Subcommittee Outcome Objective:

By 2010, evaluate the effectiveness of the system by looking at comparative mortality and morbidity data from 2001 and 2010 or the most recent year available.

Long-term outcome objective updated as of: Sept 2004

Future Interim Goal:

By 2005 have a fully operational trauma system, including all the components identified in the Department of Health and Family Services Wisconsin Trauma Plan.

Wisconsin Baseline	Wisconsin Sources and Year
None, this is a developmental objective.	

Federal/National Baseline	Federal/National Sources and Year
As of 2004, over 40 States have or are in the process of establishing a trauma care system.	

Related USDHHS Healthy People 2010 Objectives			
Chapter	Goal	Objective Number	Objective Statement
1 – Access to Quality Health Services	Improve access to comprehensive, high-quality health services	1-13	Increase the number of Tribes, States, and the District of Columbia with trauma care systems that maximize survival and functional outcomes of trauma patients and help prevent injuries from occurring.

Definitions	
Term	Definition
Emergency medical services	Ambulance service providers, emergency medical technicians that staff the ambulances and the related activities for access to help (911) dispatch of services, and treatment in emergency rooms of hospitals.
Levels one, two, three and four trauma hospitals	A classification level of hospital capabilities to treat trauma patients. Level one is the highest level.
Regional trauma advisory councils	Advisory councils set up in areas of the state that work together in providing trauma care.
Statewide Trauma Advisory Council	An appointed advisory council set up to help the Wisconsin Department of Health and Family Services develop and implement a statewide trauma care system.
Trauma system	A system that coordinates the response to an injured patient to ensure that they receive the right care from the right place in a timely manner.

Rationale:

- Studies of organized state trauma systems show a 15 percent reduction in all trauma deaths (Mullins 1999). Based on 2,708 deaths due to injury in 1998, 406 lives saved could have been saved in Wisconsin.
- One study of an organized state trauma system showed a 9 percent reduction in trauma deaths from motor vehicle crashes (Nathens 2000). Based on 713 deaths due to motor vehicle crashes in 1998, 64 lives saved could have been saved in Wisconsin.
- Injuries are the leading cause of death for persons ages 1 to 44 (Centers for Disease Control and Prevention, Web-based Injury Statistics Query and Reporting System data 1998). Injury deaths account for 53 percent of all deaths in this age group.
- Statistics show injuries are the leading cause of years of productive life lost (Centers for Disease Control and Prevention, Web-based Injury Statistics Query and Reporting System data 1998). Based on 1998 Wisconsin causes of death, injury deaths result in more years of productive life lost than any other cause and, in fact, are equal to the years lost due to heart disease and cancer combined.
- A trauma system creates a mechanism to ensure that an injured patient receives the right care from the appropriate facility in a timely manner. This means that a fully functional system is in place that ensures the appropriate steps are taken from initial reporting of the injury, to prehospital care and transport, to emergency room and hospital care, and all the way through release and rehabilitation.
- Wisconsin is among only a few states in the nation that does not have a statewide trauma system. Trauma (injury) is a major health issue and the number of deaths and serious injuries can be altered.

Outcomes:

(Initial list of potential implementation partners are in parentheses)

Short-term Outcome Objectives (2002-2004)

- By 2002, educate, influence and obtain commitment from policymakers (state, county and local), direct care providers and the general public.
- By 2002, identify all potential partners that should or would like to be involved.
- By 2002, develop and distribute educational materials to targets and the general public.
- By 2002, develop and deliver training for professionals to educate them on the trauma system and how it influences their work.
- By 2002, create a base for the statewide trauma system, including statutory authority and funding.
- By 2002, develop and implement regional trauma advisory councils, based on recommendations from the Statewide Trauma Advisory Council.
- By 2003, begin data collection from level one and two trauma hospitals.
- By 2003, classify trauma care capabilities for all hospitals in the state.

Inputs: *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*

- The Wisconsin Legislature needs to be well informed so they can provide the base for the statewide trauma system, including statutory authority and funding.
- Department of Health and Family Services, Bureau of Emergency Medical Services and Injury Prevention staff, the State Trauma Advisory Council, and committed partners will need to develop and implement an educational campaign to raise awareness and

educate and influence policymakers (e.g., state, county, local), direct care providers, and the general public about trauma. These same groups will develop and deliver training for professionals to educate them on the trauma system and how it influences their work.

- Department of Health and Family Services, Bureau of Emergency Medical Services and Injury Prevention, State Trauma Advisory Council, hospitals and interested regional parties must develop and implement regional trauma advisory councils, based on recommendations from the Statewide Trauma Advisory Council.
- Bureau of Emergency Medical Services and Injury Prevention staff must work with hospitals to assist with classification of trauma care capabilities for all hospitals in the state and begin data collection from level one and two trauma hospitals.
- The Bureau of Emergency Medical Services and Injury Prevention, State Trauma Advisory Council and the regional trauma advisory councils must work to support community-level collaborations and provide trauma information to communities and decision makers.

Note: Lead for facilitation – Department of Health and Family Services, Bureau of Emergency Medical Services and Injury Prevention, which has statutory authority in sec. 146.56, Wis. Stats., to develop and implement a statewide trauma system.

Outputs: (*What we do – workshops, meetings, product development, training. Who we reach – community residents, agencies, organizations, elected officials, policy leaders, etc.*)

- Development and dissemination of a standardized presentation package and educational materials on the merits and workings of a statewide trauma system.
- Regional trauma advisory councils will be formed and will begin meeting to organize trauma care in their region.
- All hospitals will have confirmed classification levels, and that information will be disseminated to local health care providers.
- Level one and level two hospitals that currently have computerized trauma registries will submit data electronically to the State Trauma Registry. This information will be supplemented by reports obtained from the Bureau of Health Information hospital discharge database. Target date for completion of Phase I is July 1, 2004.

Medium-term Outcome Objectives (2005-2007)

- By 2004, all laws and policies needed to support trauma system implementation are in place.
- By 2004, have fully functional regional trauma councils in place.
- By 2004, have level one and two trauma hospitals reporting to a standardized trauma registry (database).
- By 2004, provide data to locals for decision making and to support community-level collaborations.
- By 2005, have system review functions (continuous quality improvement) in place for each region.
- By 2006, have a fully functional statewide trauma system in place.
- By 2007, have a complete trauma registry established (includes level three and four hospitals).

Inputs: (*What we invest – staff, volunteers, time money, technology, equipment, etc.*)

- The Wisconsin Legislature and the Bureau of Emergency Medical Services and Injury Prevention must write and implement laws and policies needed to support a statewide trauma system.

- Funding must be provided to properly develop and implement a fully functional trauma system.
- Bureau of Emergency Medical Services and Injury Prevention, the State Trauma Advisory Council, and the regional trauma advisory councils will establish regional trauma advisory councils to be fully functional and have system review functions for continuous quality improvement in place for each region.
- Levels one and two trauma hospitals will be reporting to a standardized trauma registry (database) by 2004 and a complete trauma registry that includes levels three and four hospitals will be established by 2007.
- Bureau of Emergency Medical Services and Injury Prevention, the State Trauma Advisory Council, and the regional trauma advisory councils will provide data to locals for decision making and to support community-level collaborations.
- Bureau of Emergency Medical Services and Injury Prevention, the State Trauma Advisory Council, and the regional trauma advisory councils will ensure all the components of a fully functional statewide trauma system e.g., hospital classification, regional councils, continuous quality improvement, data, etc.) will be in place by 2006.

Outputs: *(What we do – workshops, meetings, product development, training. Who we reach- community residents, agencies, organizations, elected officials, policy leaders, etc.)*

- Level Three and Level Four hospitals will phase-in data collection and submission in a format that will be determined as database design is developed and refined. The maximum number of trauma cases fitting submission criteria is estimated at about 50 per year. The target date for completion of Phase II is July 1, 2007.
- Regular meetings of regional trauma advisory councils will be ongoing to improve the system.

Long-term Outcome Objectives (2008-2010)

By 2010, compare data pre-trauma system (2000 data) and compare it with data during implementation and full development of the trauma system. By 2010, decrease death and serious injury due to trauma by 10 percent.

Inputs: *(What we invest – staff, volunteers, time money, technology, equipment, etc.)*

- (Bureau of Emergency Medical Services and Injury Prevention and the regional trauma advisory councils collect and analyze data at the regional and state level.)

Outputs: *(What we do – workshops, meetings, product development, training. Who we reach- community residents, agencies, organizations, elected officials, policy leaders, etc.)*

- Data indicates impact of statewide trauma system in decreasing injuries and death.

Evaluation and Measurement

Success in implementing the system will be marked by attaining the process goals identified. These include creation of laws and rules, classification of hospital capabilities, development of regional trauma advisory councils, and data collection and analysis.

Comparing injury and death data from pre-trauma system development to post-trauma system implementation will do the ultimate evaluation. The goal is a 10 percent decrease in serious injury and death.

Crosswalk to Other Health and System Priorities in Healthiest Wisconsin 2010

Integrated Electronic Data and Information Systems: Use of existing or linkable databases is necessary to measure the effectiveness of a trauma system. Some trauma data does exist in current data collected by the Bureau of Health Information. Additional data sources need to be developed to get a more detailed picture of trauma care.

Community Health Improvement Processes and Plans: A trauma system involves planning by many partners in the community and region. Prominent partners include hospitals, emergency medical services, local health departments, law enforcement departments, traffic safety professionals and injury prevention specialists. Trauma care and injury prevention should be part of any broad community health improvement process or plan.

Coordination of State and Local Public Health System Partnerships: A successful trauma system requires broad involvement from a varied group of participants. Anyone involved in injury prevention, prehospital care, hospital care, and rehabilitation in a potential trauma partner. Organizing these entities at the local, regional, and state level is key to a successful system.

Sufficient, Competent Workforce: Improvement in prevention of injuries and treatment for those who are injured requires a competent workforce, in particular, training of EMS and hospital staff and sufficient personnel to provide care are essential.

Equitable, Adequate, and Stable Financing: To build a trauma system will involve some investment to develop regional councils, coordinate regional and statewide activities, and collect and analyze data to evaluate and improve the system. Although much of this work will be done by in-kind contributions of time and resources, there is still a need for base funding to establish a minimal infrastructure.

Significant Linkages to Wisconsin's 12 Essential Public Health Services

Promote community partnerships to identify and solve health problems: A successful trauma system requires broad involvement from a varied group of participants--anyone involved in injury prevention, prehospital care, hospital care, and rehabilitation in a potential trauma partner. Organizing these entities at the local, regional, and state level is key to a successful system.

Create policies and plans that support individual and community health effort: An organized effort will be necessary to plan, promote, and implement a trauma system. Widespread support will help make the system happen.

Link people to needed health services: A trauma system is an emergency safety net that will serve all Wisconsin citizens.

Evaluate effectiveness, accessibility, and quality of personal and population-based health service: Outcome data pre- and post-trauma system implementation will measure effectiveness. Regional and local continuous quality improvement processes will monitor and improve local care.

Assure access to primary health care: A trauma system is an emergency safety net that will serve all Wisconsin citizens. By dialing 911, all citizens will have access to trauma care.

Connection to the Three Overarching Goals of Healthiest Wisconsin 2010

Protect and promote health for all: A statewide trauma care system will provide a uniform standard of care and ensure timely access to the appropriate health care facility.

Eliminate health disparities: The nature of a trauma care system is to provide emergency access to all injured parties and sets up protocols to ensure the patient is taken to the appropriate health care facility.

Transform Wisconsin's public health system: A statewide trauma care system involves participation by a large number of partners, particularly in providing input at the regional trauma councils.

Key Interventions and/or Strategies Planned:

- Regional partnership development in creating regional trauma advisory councils and impacting collaborative work in caring for and following-up on trauma patients.
- Focused prevention strategies based on regional data and trends.

References:

Bass, R.R., Gainer, P.s., & Carlini, A.R. (1999). Update on trauma system development in the United States. *Journal of Trauma*, 47(3 Suppl): S15-21. Based on a 1999 survey, they found that 43 out of 51 States (includes Washington D.C.) had some trauma system components in place. Only 8 states (including Wisconsin) had no components.

Miller, T.R., & Levy, D.T. (1995). Effect of regional trauma care systems on costs. *The Archives of Surgery*, 130(2):188-193. Their research showed that states with trauma care systems have 15.5 percent lower costs per hospitalized injury episode. This figure was for direct medical care only and does not include the additional societal savings from earlier return to work and the enhanced tax base.

Mullins, R.J., & Mann, N.C. (1999). Population-based research assessing the effectiveness of trauma systems. *Journal of Trauma*, 47(3 Suppl): S59-66. They reviewed recently published research on the effectiveness of trauma systems. They concluded that literature supports a 15 percent to 20 percent improved survival rate for seriously injured patients with trauma system implementation.

Mullins, R.J., Mann, N.C., Hedges, J.R., Worrall, W., & Jurkovich, G.J. (1998). Preferential benefit of implementation of a statewide trauma system in one of two adjacent states. *The Journal of Trauma*, 44(4): 609-16. They compared data from Oregon and Washington prior to trauma system development (1985-1988) and then after Oregon's trauma system was in place (1990-1993). They found no difference between the states prior to 1990, but significantly lower death rates in Oregon after their trauma system was in place, particularly for head injuries and liver/spleen injuries.

Nathens, A.B., Jurkovich, G.J., Rivara, F.P., & Maier, R.V. (2000). Effectiveness of state trauma systems in reducing injury-related mortality: A national evaluation. *The Journal of Trauma*, 48(1):25-30. They found that states with trauma systems had a 9 percent lower crude injury death rate than those without a statewide system. Crude rates for reduction in motor vehicle crash deaths was 17 percent lower and after adjusting for age, state speed laws, restraint laws and population distribution, there remained a 9 percent reduction in motor vehicle crash-related death in states with a trauma system.

Norwood, S., Fernandex, L, & England, J. (1995). The early effects of implementing ACS level II criteria on transfer and survival rates at a rurally based community hospital. *The Journal of Trauma*, 39(2): 240-4. They found increased transfer of seriously injured patients and improved survival of the most critically injured patients.

Peitzman, A.B., Courcoulas, A.P., Stinson, C., Udekwu, A.O, Billiar, T.R., & Harbrecht, B.G. (1999). Trauma center maturation: Quantification of process and outcome. *Annals of Surgery*, 230(1): 87-94. Results from over 15,000 patients from 1987 to 1995 showed that as a regional trauma system matured, there was a corresponding drop in time to definitive care, medical complications, length of hospital stay, and death due to trauma.

Sampalis, J.S., Denis, R. et. al., (1999). Trauma care regionalization: A process-outcome evaluation. *The Journal of Trauma*, 46(4): 565-79. The regional trauma system developed in 4 phases over a 6-year period. They found that the death rate for serious injuries decreased over the 4 phases from 52 percent to 32 percent to 19 percent to 18 percent. In addition, the mean prehospital time decreased from 62 to 44 minutes.