

**STATE OF
NEW HAMPSHIRE**

TRAUMA SYSTEM PLAN

2010

TRAUMA MEDICAL REVIEW COMMITTEE

**NH DEPARTMENT OF SAFETY
DIVISION OF FIRE STANDARDS AND TRAINING AND
EMERGENCY MEDICAL SERVICES**

NEW HAMPSHIRE TRAUMA SYSTEM PLAN

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INTRODUCTION

The residents of the State of New Hampshire strongly support a comprehensive state-wide trauma system. This support is based on the following beliefs:

- Traumatic injury is one of the principal causes of premature death and unnecessary disability.
- Residents and visitors are entitled to the highest level of emergency and trauma care services.
- The organized and coordinated delivery of emergency medical and trauma care services will result in an improved system of health care services throughout the state.

The statewide trauma system is described in this document, the New Hampshire Trauma System Plan. This document is designed to provide trauma care professionals, public health officers, and health policy experts with direction to fully integrate the public health and trauma care systems of New Hampshire. It offers guidance to promote the effective collaboration of all whose charge includes the health and welfare of the public.

This model emphasizes a public health approach to trauma system development. The system is inclusive in nature and engages not only all health care facilities to the level of their capabilities, but also the full range of public health services available in the communities served. The overall goal is a collaboration of these two systems of health care to reduce the incidence and severity of injury, as well as to improve the outcomes of those who are injured.

The NH Trauma System Plan has been developed within the public health system framework. In this document trauma care professionals are introduced to the use of the public health framework as a guide for trauma system management. Public health professionals will be introduced to an understanding of an inclusive trauma system organized within the commonly accepted parameters of the public health approach. Health care policy makers will be introduced to collaborative opportunities in which the public health system and the trauma care system can partner to reduce the total burden of injury in the community.

An important principle of the NH Trauma System Plan is that the effective delivery of trauma services to adult and pediatric trauma patients requires the formal, consistent and coordinated action of several agencies and facilities. Formalizing the trauma system adds additional administrative and regulatory components to the current structure while formalizing the relationships and responsibilities of the trauma system participants.

Traumatic injury refers to physical injuries that pose discernible risk for death or long-term disability. Trauma is estimated to be responsible for over 160,000 deaths annually in the United States, an estimated mortality rate of 55 per 100,000 population. These figures are not decreasing; rather, they are on the rise.

Trauma is the leading cause of death for Americans under 44 years of age (including homicides) and is among the top ten causes of death for all other age groups. In addition to the medical, psychosocial, and financial burdens placed on individuals, families, and hospitals, society at large is profoundly affected by injury.

The financial cost of injuries is estimated at more than \$224 billion annually. This estimate includes direct medical care, rehabilitation, lost wages, and lost productivity. The Federal government expenditure on injury-related medical cost approaches an estimated \$13

billion each year, with an additional \$18.4 billion allocated to death and disability benefits. Insurance companies and other private sources pay additional costs estimated at \$161 billion.

When national preparedness for all types of disasters, including terrorist events, is considered; the need for effective injury response (trauma) systems is clearly evident. Even with current efforts to minimize injury, it continues to be “the neglected disease of modern society,” as it was described in the 1966 white paper *Accidental Death and Disability: The Neglected Disease of Modern Society*.

Trauma care of persons with multiple, severe injuries is believed to be as available and reliable nationwide as police and fire protection. Unfortunately, this belief is not universally true. Although great strides have been made during the past generation in extending emergency medical and trauma care to the citizens of our nation, most states are realizing that they need to create, further develop, or enhance their state’s ability to care for trauma patients through system development.

Emerging Linkages Between Public Health and Trauma Systems

Nationwide the increased incidence of major trauma in the late 1980s and early 1990s led public health professionals to recognize obvious parallels between the epidemiologic behaviors of illnesses and injuries. It also led these professionals to champion a public health approach to injury prevention and control.

Injury prevention leaders recognized that public health strategies tested during the years of communicable disease eradication could be successfully applied to the prevention of injury. As a result, these leaders developed the methods used for effective injury prevention programs.

Additionally, the tragic events of September 11, 2001, prompted a reassessment of the strengths and weaknesses of the emergency care and public health systems. Not only did an awareness of the need for prepared and fully interoperable emergency medical, trauma care, and disaster response systems increase, but recognition of the importance of the public health infrastructure in responding to terrorist threats for all hazards became evident. Upon review of the public health infrastructure, a broader understanding emerged of the need for emergency care and public health systems to be more integrated.

The Trauma System Approach

A trauma care delivery system consists of an organized approach to facilitate and coordinate a multidisciplinary system response to provide care for those who experience severe injury. The system encompasses a continuum of care that provides injured persons with the greatest likelihood of returning to their prior level of function and interaction within society. This continuum of care includes injury prevention, EMS 9-1-1/dispatch, medical oversight of prehospital care, appropriate triage and transport, emergency department trauma care, trauma center team activation, surgical intervention, intensive and general in-hospital care, rehabilitative services, mental and behavioral health, social services, community reintegration plans, and medical care followup.

There are many phases in the process of care for those who are traumatically injured. Although injury prevention initiatives can do a very good job to maintain injury rates at a minimum, they cannot prevent all injury. When injury occurs, each phase of care, as demonstrated in Figure 1 should occur seamlessly. Injury data should be collected

throughout each phase of care and analyzed so that data usage will yield continuous performance improvement in trauma care delivery.

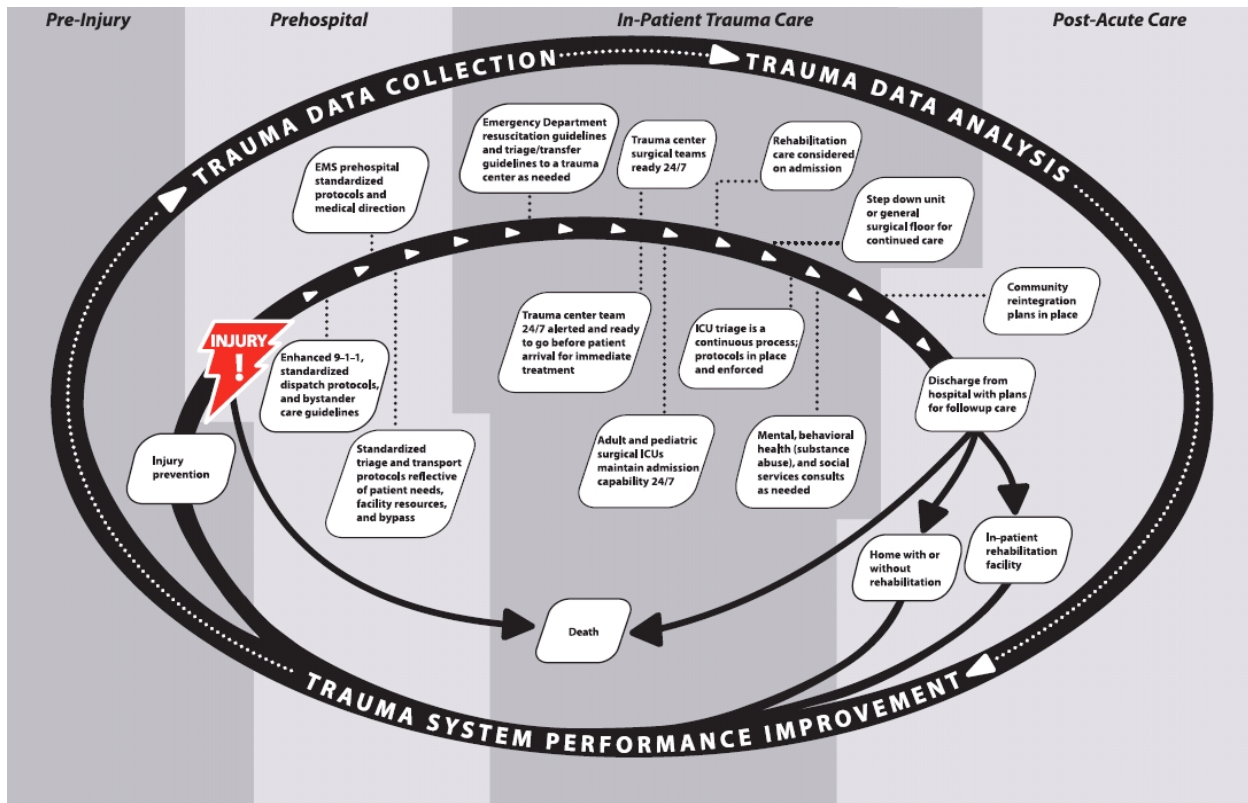


Figure 1. A Preplanned Trauma Care Continuum. Source: US Department of Health and Human Services, Health Resources and Services Administration, Trauma-EMS Systems Program: Model Trauma Systems Planning and Evaluation, February 2006.

Many components make up the NH Trauma System. Detailed planning is required for all components to interface successfully and health professionals to interact properly, enabling the trauma system to work effectively. This statewide network, or system of health care delivery, requires a multidisciplinary team approach. Such an approach is a requirement for an inclusive, seamless system of health care delivery in which all involved health care providers function in pre-planned concert with one another.

Emergency Medical Service (EMS) providers match patients, through protocols and medical supervision, with the correct medical facility equipped with the right resources to best meet the patient’s needs. This approach may mean bypassing the closest medical facility.

A trauma system is a partnership between public and private entities to address injury as a community health problem. These entities have common interests (e.g., right patient, right hospital, and right time) and interdependent goals (e.g., injury prevention strategies for the community, and quality care in all settings—prehospital, hospital, and rehabilitation). The trauma system must effectively address the needs of the adult population and the specialized needs of seriously injured children.

The Public Health System

Public health is “what we as a society do collectively to assure the conditions in which people can be healthy.” The public health system exists to ensure a safe and healthy environment for all citizens in their homes, in schools, in workplaces, and in such public spaces as medical care facilities, transportation systems, commercial locations, and recreational sites. To achieve the best population health, the public health system functions through activities undertaken within the formal structure of government and the associated efforts of private and voluntary organizations and individuals.

The public health system is a complex network of individuals and organizations that have the potential to play critical roles in creating conditions for health. The collaborative effort between these individuals and organizations is the framework needed to influence social policy that supports health. The primary strategy of the public health approach is the following:

- Identify a problem based on data [Assessment]
- Devise and implement an intervention [Policy Development]
- Evaluate the outcome [Assurance]

The public health approach is a proven, systematic method for identifying and solving problems. Improvements in the public health system, in partnership with the health care system, can be accomplished through informed, strategic, and deliberate efforts to positively affect health.

Integration of Trauma Care and Public Health Systems

The application of the public health model to trauma systems is based on the concept that injury as a disease can be prevented and/or its negative impacts decreased by primary, secondary, or tertiary prevention efforts. Efforts to prevent or decrease the morbidity and mortality from injury are similar to those taken for infectious diseases. Thus, injury prevention is an essential component of the trauma system continuum of care. This concept provides support for public health system collaboration on targeted risk reduction programs for injury prevention, including major trauma.

Specialized trauma care is not enough to minimize the burden of injury to society at large. It must be combined with other risk reduction strategies to reduce the overall burden of physical injury. Many experts in trauma care and injury prevention recognize the need for both excellent trauma care and effective injury prevention programs to reduce injury deaths and disabilities.

This goal can be accomplished when private-public partnerships between health care providers and public health agencies emphasize optimal approaches for the three phases of injury prevention. Key objectives in reducing the burden of injury and in making improvements in the trauma care of persons with serious injury include forging effecting collaborations among community health care facilities and public health agencies. Injury will be significantly reduced through planned interventions that are based on public health strategies.

The application of the public health approach to trauma system development will result in the following:

- Recognition that injury continues to be a public health problem of monumental importance despite significant efforts at trauma system development.

- Identification and management of injury- and trauma system-related problems using data-driven problem identification and evaluation methods as employed by public health professionals.
- Access to local, regional, and state public health professionals with injury prevention training and experience, as well as a broader range of strategies for primary and secondary prevention. Trauma care professionals are traditionally educated in tertiary prevention.
- Expansion of the focus of outreach for trauma system injury prevention to include primary prevention. Trauma centers and trauma systems usually address secondary and tertiary injury prevention.

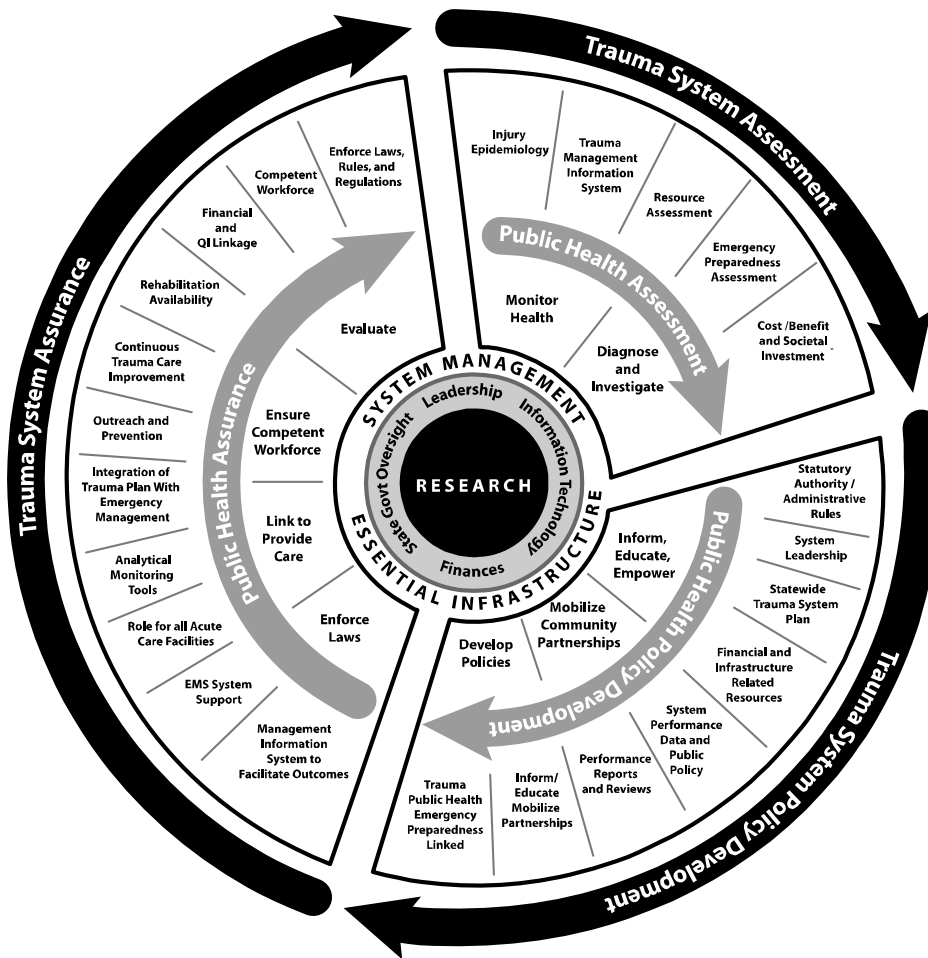


Figure 2 demonstrates public health functions (PH) and trauma system functions (TS) in one wheel. It displays how the conceptual public health model applies to trauma system planning.

SECTION ONE

ADMINISTRATIVE COMPONENTS

ORGANIZATION AND MANAGEMENT

I. DESCRIPTION

The New Hampshire Trauma System is an organized and coordinated delivery of pre-hospital, hospital and rehabilitation medical and health care services. The organizational structure of the New Hampshire Trauma System is dictated by the course of appropriate medical treatment and admission of all injured patients with specific emphasis on the optimal care needs of the severely injured trauma patient. The organizational structure of the New Hampshire trauma system identifies and defines the authorities and responsibilities of each system provider (agency or facility), the relationships between each facility and the reporting requirements between each.

State-wide trauma systems have an additional organizational feature, a trauma system administrative lead agency and governing or coordinating board. The NH Department of Safety, Division of Fire Standards and Training and Emergency Medical Services (FST&EMS) is the lead agency that has the responsibility and authority to administer the system. The Trauma Medical Review Committee (TMRC) is the coordinating board for trauma care.

The NH Trauma System recognizes and addresses the need for effective and competent care of both the adult and pediatric trauma patient.

II. STANDARDS

The organizational structure of the NH Trauma System fosters coordinated action by each system participant to assure and facilitate the appropriate course of medical treatment that is necessary for the severely injured trauma patient. The statewide trauma system adds an administrative and regulatory structure to the delivery of trauma services, and formalizes the relationships and responsibilities of the trauma system participants.

The NH Trauma System is a voluntary, inclusive trauma system. One of the hallmarks of a trauma system is the ability to categorize hospitals according to the level of resources each can apply to the definitive care of trauma. A level I trauma hospital has all the resources available to treat a seriously injured patient. A community hospital (level III or IV) might be capable of providing definitive care to minor to moderate patients, but has a limited role in caring for seriously injured patients (stabilization and transfer).

The NH Trauma System is voluntary in that hospitals may choose to actively participate in the trauma system by seeking trauma hospital assignment. In some states this process is mandatory, but in NH it is not. A NH hospital seeking assignment at a particular level agrees to meet the standards set by the TMRC, undergo an assessment of its ability to meet the standards, and adhere to those standards.

An inclusive trauma system means that all acute care hospitals with emergency departments are recognized to have a role in trauma care, whether or not they actively participate in the NH Trauma System through trauma hospital assignment. Non-participating hospitals in the NH Trauma System benefit from statewide performance

improvement activities, improvements in care delivered by EMS providers, educational opportunities, and consulting services offered through the Trauma System Section of the NH Division of FST&EMS.

SYSTEM MANAGEMENT

I. DESCRIPTION

An effective trauma system is one which has a lead agency or bureau implementing the recommendations of a coordinating board. The coordinating board should be empowered by legislation with the authority to establish, implement, monitor and enforce trauma system standards, policies, procedures and protocols. The board should also be empowered to define participation in the system and make recommendations for the correction of non-compliance with standards and regulations.

The delivery of trauma care services to severely injured trauma patients in New Hampshire involves several agencies and facilities providing rapid and coordinated health care services to individual trauma patients. These agencies are pre-hospital emergency medical service providers, assigned trauma hospitals, other acute care hospitals, rehabilitation facilities and specialty care facilities.

In optimal trauma systems each of these diverse agencies provide trauma services based on specific performance standards, operate in a coordinated manner and continually strive to improve their individual and coordinated delivery of service

II. STANDARDS

The New Hampshire Trauma System is a coordinated system managed on the state level by FST&EMS which should have sufficient resources and personnel to effectively manage the trauma system.

To assure public accountability and responsiveness to the needs of the trauma system service providers, the TMRC is composed of representatives of the trauma system participants, governmental officials and concerned citizens.

TRAUMA SYSTEM LEAD AGENCY

Commissioner of Safety and the Division of Fire Standards and Training and Emergency Medical Services: Authorities and Responsibilities

The Commissioner of Safety has been empowered to educate the public, establish a data collection system and provide for training of providers about the trauma system. The Commissioner has been specifically empowered by RSA 153-A-7 to:

- Adopt rules, with the approval of the Coordinating Board and the Trauma Medical Review Committee, in accordance with RSA 153-A:20.
- Oversee the establishment of the Trauma Medical Review Committee.

As regards rulemaking authority specifically for the trauma system, the Commissioner has been empowered by RSA 153-A:20 to develop rules relative to:

- Patient triage and transfer.
- The categories of classification of hospitals which provide adult and pediatric trauma services.

The staff to administer the day-to-day operation of the trauma system has been organizationally placed within the New Hampshire Department of Safety, Division of Fire Standards and Training and Emergency Medical Services, and has been charged with the following responsibilities:

- Implement the recommendations of the Trauma Medical Review Committee.
- Perform staff and clerical functions needed by the Trauma Medical Review Committee to carry out its responsibilities, specifically staff and clerical services related to hospital classification and participation.
- Monitor the performance of trauma system service providers in accordance with standards, criteria and provider obligations recommended by the Trauma Medical Review Committee
- Implement the system-wide data collection program and system quality management and evaluation program.
- Facilitate the implementation of injury prevention and public education and information programs.

Emergency Medical and Trauma Services Coordinating Board: Authorities and Responsibilities:

The Emergency Medical and Trauma Services Coordinating Board has been empowered by New Hampshire statute, RSA 153-A:4 as regards the trauma system to:

- Routinely assess the delivery of emergency medical services, based on information and data provided by the department and from other sources the board deems appropriate, with particular attention to the quality and availability of care.
- Propose rules to the commissioner prior to their adoption under RSA 541-A, or consider and advise on rules proposed by the Commissioner.
- Approve statewide trauma policies, procedures, and protocols of the statewide trauma system and the establishment of minimum standards for system performance and patient care proposed by the Commissioner prior to their adoption under RSA 541-A.
- Coordinate interstate cooperation and delivery of emergency medical and trauma services.

Trauma Medical Review Committee: Authorities and Responsibilities

The Trauma Medical Review Committee has been empowered by New Hampshire statute, RSA 153-A:8-V to:

- a Develop and routinely update the adult and pediatric trauma system plan.
- b Review statewide system operations, including monitoring adherence to established guidelines and standards, the availability of appropriate resources, and the periodic review of trauma hospital classification criteria.
- c Review the delivery of emergency medical services by providers and units concerning the provision of care to trauma patients.
- d Make recommendations to the Coordinating Board based on the reviews described in (a) and (b) above.
- e Recommend to the Emergency Medical Services Medical Control Board

- modifications of the protocols of trauma care as a result of system-wide review.
- f Assist trauma hospitals in the development and implementation of trauma quality improvement programs.
 - g Establish such subcommittees as deemed appropriate to carry out the functions of the committee.
 - h Assist the Coordinating Board in the coordination of a system of comprehensive emergency medical services and the establishment of standards throughout the state by advising the Coordinating Board on policies, procedures and protocols.

The Trauma Medical Review Committee will systematically collect data in order to evaluate trauma system operations, including monitoring compliance with standards, availability of appropriate resources, maintaining confidentiality, and periodic review of trauma facility standards.

INJURY PREVENTION

I. DESCRIPTION

A primary goal of the NH Trauma System is to decrease the incidence and severity of trauma. To accomplish this goal, the NH Trauma System will utilize a state-wide public health initiative which considers injury as a disease that can be prevented or its negative impacts decreased. This concept provides support for collaboration between trauma system managers, community health care providers, including EMS and Fire personnel, and public health agencies. It also allows the injury prevention initiative to address all phases of injury prevention efforts: pre-injury (primary); at the time of injury (secondary); and post injury (tertiary). Combining the expertise of professionals from many organizations enables effective leveraging of all resources for primary and secondary prevention and their coordination with the trauma system in tertiary prevention.

Statewide injury prevention planning, implementation and evaluation requires extensive collaboration between agencies and organizations beyond those providing direct clinical care. The NH Injury Prevention Program located in the NH Department of Health and Human Services has overall responsibility for the development, implementation and evaluation of the NH Injury Prevention Plan. The NH Trauma System leadership will collaborate closely with the NH Injury Prevention Program to implement and monitor its injury prevention initiatives and programs.

A critical element of an injury prevention program is the necessity for statewide data to assess the incidence and severity of injury in the state and local communities. Data are collected and analyzed by many agencies and organizations but individual databases may provide an incomplete analysis of injury occurrence. Collaboration of these various organizations and sharing of data will enhance monitoring capability and development of directed prevention programs. Potential data sources include vital statistics, hospital discharges, emergency department discharges, trauma registries, state fire marshal, law enforcement, emergency medical services, and transportation departments.

II. STANDARDS

The NH State Trauma System will be an active partner in the NH Department of Health and Human Services based Injury Prevention Program for reducing injury-related morbidity and mortality. Leadership will:

- Partner with statewide initiatives including but not limited to: Fall Prevention Program, Poison Control, SafeKids, Injury Prevention Program at Dartmouth, Emergency Nurse Association, NFPA's Risk Watch, and Learn Not to Burn.
- Identify, promote, and disseminate proven strategies for trauma system participants to effectively contribute to prevention activities.
- Monitor injury-related morbidity and mortality and regularly provide information to statewide injury programs and hospitals.
- Link injury prevention strategies at the state and community level to injury databases.

Hospitals play an important role in reducing the impact of injury in their communities by providing leadership and participating in targeted evidence-based prevention efforts. Hospitals are urged to take part in ongoing prevention programs that meet their community's needs. Ideally hospitals should:

- Designate a prevention coordinator.
- Implement targeted injury prevention programs/strategies using trauma information specific to their communities.
- Participate in existing/ongoing community prevention coalitions or activities.

TRAUMA SYSTEM PERFORMANCE IMPROVEMENT PROGRAM

I. DESCRIPTION

The New Hampshire Trauma System state-wide performance improvement program is a system-wide evaluation program that monitors the performance of the trauma system over time and assesses the system's impact on trauma victims' mortality and morbidity. It is important to understand that there are two major foci of the New Hampshire performance improvement program; a system-wide performance improvement program and individual hospital and EMS agency trauma performance improvement programs. These two programs operate concurrently and there is a direct relationship between the state-wide performance improvement program and the performance improvement programs of the individual trauma care service providers. The trauma care service providers, particularly the hospitals, will gather detailed data regarding services rendered to trauma patients. These providers will also submit specific data elements relating to system-wide issues to the state-wide trauma performance improvement program. This state-wide program will routinely analyze and report on the effectiveness and efficiency of the overall trauma system.

System-wide Data

A crucial part of a system-wide performance improvement program is the collection of system-wide data. This data is typically collected through a state-wide trauma registry. In addition, nation-wide trauma databases have been established. Hospitals that actively participate in the NH Trauma System are required to submit data to the state trauma registry. See Appendix B for information regarding the statewide trauma registry.

Pre-hospital Data

The Division of Fire Standards and Training and EMS has designed and implemented a state-wide electronic pre-hospital run report program. In 1992, the Legislature of New Hampshire passed a new emergency medical services statute. This legislation empowered FST&EMS to mandate the collection of pre-hospital run report data. The NH

Trauma and EMS Information System (TEMSIS) is the state's electronic data system, and has been in place since 2006.

Hospital Data

As regards trauma patients, there have been two types of data collection and analysis that the hospitals have performed. Several of the hospitals that admit a significant number of trauma patients have installed trauma registries, either commercially available programs or in-house developed programs. Refer to Appendix B for information regarding the statewide trauma registry.

The second data collection and analysis program in which all New Hampshire hospitals participate is the reporting of uniform hospital discharge abstract data on all admitted patients. The data are collected by the New Hampshire Hospital Association and the NH Department of Health and Human Services and has been analyzed to identify the number, type, and severity of injuries of patients admitted to hospitals with traumatic injuries. There are two limitations of the discharge abstract data. First, there is a lag time of several years in the collection, analysis and reporting of the data. Secondly the data elements do not contain information regarding pre-hospital activity, source of admission, or the activity of trauma medical personnel.

The NH Hospital Association collects data about emergency room encounters. This data is collected from all hospitals and describes a significant number of patient encounters.

Rehabilitation and Specialty Care Facilities Data

In 1994, the NH Hospital Association began collecting data from rehabilitation and other specialty health care facilities. This data set is similar to the hospital data and provides information regarding the number, type and severity of trauma patients admitted to these types of facilities.

II. STANDARDS

The statewide/system-wide performance improvement program focuses on the overall effectiveness of the trauma system, particularly whether there has been significant improvement in the care delivered to major trauma patients as a result of the operation of the trauma system. Some examples of issues the Trauma Medical Review Committee will consider are: whether significantly more major trauma patients are being transported to and treated in trauma qualified hospitals than before; whether the performance of all system service providers is consistent with published performance standards and criteria; and whether the mortality and morbidity of major trauma patients is improving.

1. Guiding Principles

The design of the state-wide performance improvement program and its data collection and reporting system is guided by several principles. These principles are:

- The data collection systems used by the major providers of trauma service providers, the hospitals and pre-hospital agencies, will be the primary source for system-wide data. These facilities and agencies will routinely submit uniform system-wide data elements to FST&EMS. This process of data collection will insure the highest degree of data consistency and the lowest amount of data entry redundancy.

- The state-wide trauma system data collection program should collect only that data and information from trauma system service providers that is appropriate and necessary to evaluate the system-wide delivery of trauma services.
- The data collection program should attempt to minimize the added costs and responsibilities related to the collection of new data from the trauma system service providers.
- The data program should utilize, where ever possible, currently available data and information which relates to or describes trauma patients.
- The program should only attempt to collect data that has a high potential for being complete, accurate and descriptive.

2. Data Collection Standards

Some of the regional trauma hospitals have installed a common trauma registry to collect, analyze and report data on trauma patients transported and treated at their facilities. These registries include hospital, pre-hospital and referring hospital data and have the ability to "download" system-wide data elements. A condition of active participation in the NH Trauma System is that all trauma-assigned hospitals will collect and submit data elements to FST&EMS on each major trauma patient.

All New Hampshire hospitals will be encouraged to utilize a uniform trauma registry or data collection and reporting program. Smaller hospitals may participate with a regional hospital that has a formal program for the collection of the data elements.

Because the trauma system's performance improvement and medical review processes are developmental in nature, data requirements are subject to modification based on the performance improvement recommendations of the Trauma Medical Review Committee.

In addition to aggregated trauma registry data, data and information that is available from other sources regarding or describing trauma victims will be collected, linked, analyzed and reported. As previously described, data that is currently available from the New Hampshire Hospital Association, the hospital discharge abstract data (UHDDS) and ambulatory data as well as traffic accident data from the New Hampshire Department of Safety contains a considerable amount of information regarding traumatic injuries, particularly of trauma patients that have been hospitalized or involved in traffic accidents.

III. STATE-WIDE TRAUMA PERFORMANCE IMPROVEMENT

The Trauma Medical Review Committee (TMRC) has been empowered to systematically collect data in order to perform the following activities:

- Evaluate trauma system operations, including monitoring compliance with standards, availability of appropriate resources, maintaining confidentiality and periodic review of trauma facility standards.
- Evaluate patient care outcomes at the system level.
- Establish a process for documenting corrective action plans, problem re-evaluation and oversight.

- Recommend modifications of the standards of care in light of the results of system-wide review.
- Review the trauma performance improvement programs of the trauma system providers.

The TMRC has the authority to collect data from all trauma system service providers. Committee staff may collect and link (where appropriate) traffic accident reports, pre-hospital run reports, hospital discharge abstract data, trauma receiving facility registry data, rehabilitation facility data and medical examiner data. On an ongoing basis, the TMRC will collect more detailed data and information from the trauma receiving facilities. Patient confidentiality will be maintained in two ways. RSA 153-A:9 provides protection against judicial discovery of the records and actions of the Trauma Medical Review Committee. In addition any and all patient identifiers will be purged from the data system after the necessary data linkages have occurred.

The Trauma Medical Review Committee may generate some or all of the following reports to assess the status of the NH Trauma System:

System-wide Reports

- Total incidence of traumatic injury treated by pre-hospital providers, emergency departments, and admitted to trauma system hospitals, compared to prior years.
- The number and nature of traumatic deaths.
- The type and severity of trauma injury.
- The causes of injury.
- The demographics of injury, age, sex, location, etc.
- System efficiency reports:
 - The evaluation and analysis of:
 - times of injury as compared to times of treatment,
 - trauma patient injury assessment and scoring,
 - interhospital transfer information,
 - trauma patient identification, pre-hospital and hospital.
 - The results of standards enforcement:
 - Trauma team mobilization
 - Arrival of trauma team members
- Injury prevention initiatives and priorities.
- The analysis of traffic accident injuries, including restraint utilization

Hospital Specific Reports

- Total number of traumatic injury admissions for all hospitals
- The number and nature of traumatic deaths of admitted trauma patients
- The type and severity of trauma injury.
- The cause of injury (E codes)
- The demographics of injury, age, sex, residence, date.
- The financial impact of traumatic injury
 - Total charges by financial classification
- Hospital disposition/outcome

Regarding Emergency Room Encounters

- Total number of traumatic injury ER encounters for all hospitals
- The type and severity of trauma injury.

- The demographics of injury, age, sex, residence, date.
- The financial impact of traumatic injury
 - Total charges by financial classification
- ER disposition/outcome

Rehabilitation Reports

- Total number of traumatic injury admissions for all rehabilitation facilities
- The number and nature of traumatic deaths of admitted trauma rehabilitation patients
- The financial impact of traumatic injury
 - Total charges by financial classification
- Patient disposition

Pre-hospital Reports

- response times
- dispatch time
- nature of field assessment & treatment
- use of field triage criteria and standards
- nature of transport decisions
- scene time
- transport time
- overtriage and undertriage rates
- air medical transport utilization
- interfacility transfer transports

Medical Examiner Reports

- cause of death
- circumstance of death

Traffic Accident Reports

- location and time of accident
- conditions causing accident and circumstances of accident scene
- nature and severity of vehicular damage
- position and activities of driver, occupants

Implementing Trauma Care Improvement Initiatives

After analysis of the data, the TMRC should recommend to the Emergency Medical and Trauma Services Coordinating Board corrective action and remediation in instances where the performance of EMS providers does not meet the criteria and standards of the trauma system. In addition the TMRC may consult directly with hospitals in the NH Trauma System to develop plans to remediate any deficiencies. The TMRC will consider changes to prehospital protocols and shall undertake efforts to conduct educational programs to enhance trauma care.

IV. TRAUMA FACILITY AND EMS PROVIDER TRAUMA PERFORMANCE IMPROVEMENT PROGRAM GUIDELINES

The NH Trauma Plan requires Level I, II, III and IV assigned hospitals to conduct a trauma performance improvement and patient safety (PIPS) program. Other acute care hospitals in NH and EMS agencies are strongly encouraged to conduct trauma performance improvement. The specific design and nature of the facility and service provider performance improvement programs is an institutional or service provider decision.

The trauma hospital performance improvement program should be administered under the auspices of the hospital's trauma service and although integrated with the hospital's overall quality improvement program, should be an independent activity. The Trauma System Section of the NH Division of Fire Standards and Training and EMS is available to assist hospitals and EMS agencies develop trauma PI programs.

1. Trauma Facility Performance Improvement Programs and Patient Safety

The NH Trauma Plan requires all trauma assigned hospitals to conduct PIPS review of certain criteria. The Trauma Medical Review Committee will periodically review the criteria for **mandatory** review. These criteria may be found in Appendix A. Just as important, the NH Trauma Plan strongly encourages hospitals to conduct trauma PIPS review on selected criteria that are meaningful for their facility.

The following are **recommendations** regarding the Trauma Facility Performance Improvement Programs. The trauma facility performance improvement program may address some or all of the following:

- a. The adherence to treatment protocols in the:
 - emergency department and
 - all other departments treating trauma victims.
- b. Evaluation of personnel availability in accordance with:
 - system criteria and standards and
 - facility verification level.
- c. Evaluation of the process of patient management:
 - timeliness of response and therapy,
 - appropriateness of length of stay,
 - appropriateness of procedures performed and care provided.
- d. Evaluation of patient outcome:
 - Efficacy of specific treatments.
 - Complications.
 - Physician performance compared to an established norm.
 - Patient morbidity, mortality, disability, and the effect of rehabilitation.

The Trauma Medical Review Committee has the authority and responsibility to periodically review or audit the PIPS documentation of assigned hospitals.

2. Hospital Trauma Registry

All Level I, II, III, and IV trauma hospitals must submit required data to the statewide trauma registry. Each facility may choose which additional data elements to collect in order to facilitate their own performance improvement program.

The Trauma Medical Review Committee will periodically review the data elements that are

subject to mandatory reporting. These elements will be published and distributed as required, for inclusion into Appendix B of the facility's or service's copy of the NH Trauma System Plan.

Reporting Requirements

All Level I, II, III, and IV assigned trauma centers must collect the data elements listed in the Trauma Data Sheet (see Appendix B). The collection of the data elements is a condition of assignment. The Level I, II, III, and IV assigned trauma hospitals will submit the trauma data elements electronically to the NH Division of Fire Standards and Training and EMS on a regular basis as noted in Appendix B.

Types of Trauma Patients Qualifying for Data Collection – Inclusion Criteria

- All patients receiving a “trauma alert” from EMS, whether a trauma team was activated or not.
- All trauma team activation patients.
- All injured patients admitted from the emergency department (ED) to an intensive care unit (ICU) or operating room (OR).
- All expired injured patients.
- All injured patients with an injury severity score (ISS) of 10 or greater.
- All trauma patients who underwent interfacility transfer to another hospital.

3. Pre-hospital Provider Trauma Performance Improvement Programs

The data elements collected in the NH Trauma and EMS Information System (TEMSIS) for the EMS patient care record (PCR) are sufficient to address each of the performance improvement issues for the service provider and the trauma service hospitals. It is important that the individual service providers are routinely and periodically provided information based on the analysis of their data. The periodic provider reports should assist the agencies in their individual performance improvement programs. A pre-hospital provider trauma performance improvement program may address the following:

- a. The evaluation of response times
 - dispatch time
 - time to scene
 - on-scene time
 - time to hospital
 - total response time
- b. The evaluation of the efficacy of
 - field assessment
 - field therapy
 - field triage decisions
 - transport decisions
- c. The adherence to treatment protocols
- d. Evaluation of patient outcome
 - overtriage rates
 - undertriage rates
- e. The evaluation of medical direction

SECTION TWO

CLINICAL COMPONENTS

PRE-HOSPITAL TRAUMA SERVICES

I. DESCRIPTION

The delivery of pre-hospital trauma care to both adults and children is a major aspect of the New Hampshire Trauma System. The EMS system works in a coordinated manner with other components of the trauma system. Pre-hospital trauma care includes the following sub-components:

- **Public Education**
- **Communication**
- **Trauma Triage and Transport**
- **Medical Control and Medical Direction**
- **Helicopter Services**
- **Human Resources**

II. PRE-HOSPITAL TRAUMA SYSTEM SUB-COMPONENTS

PUBLIC EDUCATION

DESCRIPTION

Pre-hospital providers contribute to the overall trauma system public education programs by facilitating public understanding of the nature and significance of a trauma system including: what the trauma system is supposed to do; how to easily access the trauma system in times of need; and how to perform appropriate citizen assistance and interventions to trauma victims. The training of citizens in the appropriate use of cardiopulmonary resuscitation (CPR) and first aid is of particular importance. The first medical contact that trauma victims have with the trauma system is usually with pre-hospital personnel. Public perception correctly identifies the initial provision of life-saving care and assistance as that provided by fire/rescue or ambulance services. Public education programs are related to and complement trauma injury prevention programs.

STANDARDS

The pre-hospital focus of trauma system public education programs deals with the purpose and significance of the trauma system, public access and citizen appropriate treatment activities such as CPR and first aid assistance. Educational programs should target groups or individuals at high risk for injury. Specific focus should be placed on changing personal behavior that is injury-inducing such as the failure to use car seat belts and restraints, child restraints, motorcycle and bicycle helmets. New Hampshire benefits from public education programs that specifically address recreational and water safety and firearms safety training. Since trauma (primarily auto and firearm related) is the leading cause of death for the 1-24 age group in New Hampshire as well as in the rest of the country, direct attention should be placed on public education programs targeted at the elementary and high school student population, parents and young adults.

The utilization of pre-hospital personnel, such as emergency medical technicians and paramedics, in the presentation of public education programs has the potential for producing excellent results. It is recommended that EMS agencies work with their local medical resource hospital to coordinate these activities.

COMMUNICATION

There are four aspects to pre-hospital communications; citizen access to the emergency medical system to report the discovery of an injury and associated citizen assistance instructions by dispatch personnel, communication from the dispatch center to the EMS service provider, communication between EMS providers, the receiving hospital or medical control facility, and communication to and from helicopter transport services.

1. SYSTEM ACCESS

DESCRIPTION

System access is defined as the ability to rapidly and effectively report a medical emergency to the proper authorities which will culminate in the dispatch of appropriate emergency services. The most effective access system is 9-1-1. In addition, this element includes the process of advising citizens to take appropriate actions to benefit the injury victim. The NH Emergency Communications system effectively addresses these needs.

STANDARDS

The universal emergency telephone access number (9-1-1) has been conclusively shown to significantly shorten emergency response times and save lives. This system has been installed throughout New Hampshire. Upon accessing this three digit number, callers are screened immediately to public safety dispatch and a coordinated emergency response is obtained. The NH Enhanced 9-1-1 system permits the call receiver to automatically identify the caller's number and location. The provision of first aid advice to citizen callers by emergency communicators (via standardized dispatcher protocols) is an integral aspect of trauma system citizen access. The type of assistance that can be provided by a citizen, such as applying pressure to an open wound, based on the instructions given by the dispatcher, can make a significant difference in the trauma victim's outcome.

2. DISPATCHER COMMUNICATION WITH EMS SERVICES

DESCRIPTION

Dispatcher communication is the ability of a dispatch center to rapidly communicate with EMS service providers. The center alerts the service of the nature of the emergency and directs the service to respond to the emergency situation. This activity also includes the EMS agency's ability to communicate from the scene of the injury with the dispatch center to request additional assistance or information.

STANDARDS

Each emergency medical service provider in the state of New Hampshire should be dispatched by a dispatch center that has rapid and accurate ability to communicate with EMS agencies in its coverage area. This communications ability shall be available 24 hours-a-day, 7 days-a-week. Each EMS agency and provider shall have the ability to

rapidly and easily communicate with its dispatch center from the scene of the injury and enroute to or from the scene.

3. COMMUNICATION BETWEEN THE EMS SERVICES AND MEDICAL FACILITIES

DESCRIPTION

Communication between EMS services and receiving hospitals refers to the ability of the EMS service provider to communicate with his/her receiving or medical control hospital to provide information concerning the patient's condition and to receive instructions.

STANDARDS

Rapid and accurate two-way communication from EMS service providers with medical control should be assured. Licensed emergency medical service vehicles are required by NH law to be adequately equipped with communication equipment.

4. HELICOPTER COMMUNICATION

DESCRIPTION

Helicopter communication refers to the ability of an EMS service provider or hospital to request helicopter emergency air transport and the ability of the helicopter to maintain continuous communication with the EMS service or the hospital.

STANDARDS

EMS services and hospitals must have radio systems that enable communications with helicopter services. EMS services and hospitals must have a process in place to request air medical services.

TRAUMA TRIAGE AND TRANSPORT

I. DESCRIPTION

The decision regarding where the acutely injured trauma patient will receive definitive care is based on an assessment process performed by pre-hospital field personnel. Consultation with on-line medical control personnel may be initiated at the discretion of the EMS provider.

The NH EMS trauma triage protocol is regularly updated as part of the overall state EMS protocols. Multidisciplinary trauma stakeholders, including members of the Trauma Medical Review Committee, participate in the review and revision of NH EMS Protocols that refer to traumatic injury. These protocols are reviewed by the NH EMS Medical Control Board and approved protocols go through a formal roll-out process. This process is on a biennial basis

II. STANDARDS

According to NH EMS protocol each person accessing the EMS system who has sustained an injury requiring transport should be transported to the closest facility possessing the capability of providing the level of care to meet that patient's needs. In the setting of minor

or even moderate injury the closest appropriate hospital may be the closest acute care hospital. For a patient with actual or potential major trauma the closest appropriate facility may be a trauma hospital that has demonstrated that it is specially qualified for trauma care, even if another acute care hospital might be physically closer.

Prehospital personnel shall apply triage standards:

1. To determine where the injured patient should be transported;
2. To alert the trauma facility of the pending arrival of a severely injured patient;
3. To determine whether helicopter response is appropriate.

Potential exceptions to this standard may be applied under the following circumstances:

- If unable to establish and maintain an adequate airway, the patient should go to the nearest acute care facility to obtain definitive airway control by a qualified person.
- It may be appropriate to take a patient to the nearest hospital for immediate evaluation and stabilization if the expected transport time to a trauma facility is greater than 30 minutes.
- Prehospital providers have additional considerations in the case of a seriously injured child. The threshold for entering children into the trauma system may be lower than the same criteria for adults. In addition prehospital providers must be aware that an assigned adult trauma hospital may have a different level of trauma care assignment for pediatric trauma. For example Level III adult trauma hospital may have a Level IV assignment for pediatric trauma. The use of air medical transport to take a patient directly to a Level I pediatric trauma hospital may be warranted.

PREHOSPITAL TRAUMA ASSESSMENT GUIDELINES

While providing treatment according to NH EMS Protocols the EMS personnel will perform the following:

STEP 1

CONDUCT PHYSIOLOGICAL ASSESSMENT

Determine the presence of blunt or penetrating traumatic injury with associated vital signs and level of consciousness:

- Shock/hemodynamic compromise: Sustained Systolic Blood Pressure < 90 mmHg in both children and adults or other signs of shock OR
- Respiratory Distress: Apnea or Abnormal Respiratory Rate OR
- Altered Mentation: Glasgow Coma Score <9 or motor component of GCS <5 or P or U on the AVPU scale (See note below on assessment of mentation of infants less than six months old)

IF YES, CONSIDER:

1. DIRECT TRANSPORT TO LEVEL I BY GROUND OR AIR IF FEASIBLE.
2. IF ABOVE NOT FEASIBLE NOTIFY CLOSEST APPROPRIATE HOSPITAL, RECOMMEND TRAUMA TEAM ACTIVATION.

IF NO, GO TO STEP 2

STEP 2

CONDUCT ANATOMICAL ASSESSMENT

Determine presence of:

- Penetrating injury or severe blunt injury of head, neck, torso
- Multiple system trauma

IF YES, CONSIDER

1. DIRECT TRANSPORT TO LEVEL I BY GROUND OR AIR IF FEASIBLE.
2. IF ABOVE NOT FEASIBLE NOTIFY CLOSEST APPROPRIATE HOSPITAL, RECOMMEND TRAUMA TEAM ACTIVATION.

IF NO, GO TO STEP 3

NOTE FOR STEP 1 AND 2 ABOVE: FOR POSITIVE FINDINGS ON A CHILD <15 DIRECT TRANSPORT TO A LEVEL I PEDIATRIC TRAUMA FACILITY IS DESIRED

[NEXT PAGE]

STEP 3

CONDUCT MECHANISM OF INJURY ASSESSMENT

Determine presence of :

- Death of same vehicle/car occupant: or
- Ejection of patient from enclosed vehicle: or
- Falls > 20 feet for adult, for children > 2 times their height; or
- Pedestrian hit at >20 mph or
- Auto crash with significant vehicular body damage
- Significant motorcycle, ATV, snowmobile or bicycle impact

**IF YES, TRANSPORT PATIENT TO CLOSEST APPROPRIATE FACILITY,
PROVIDE PATIENT REPORT AND SUGGEST TRAUMA TEAM ACTIVATION**

IF NO, GO TO STEP 4

STEP 4

CONSIDER CO-MORBID FACTORS:

- Extremes of age <6 and >60 years of age)
- Hostile environment (such as extremes of heat or cold)
- Medical illness (such as COPD, CHF, renal failure, etc.)
- Second/third trimester of pregnancy
- Extrication time >20 minutes
- Anticoagulation or bleeding disorders
- Severe burns

**IF YES, TRANSPORT PATIENT TO CLOSEST FACILITY, PROVIDE PATIENT
REPORT AND SUGGEST TRAUMA TEAM ACTIVATION**

IF NO, TRANSPORT TO CLOSEST FACILITY

**Please note that these guidelines are intended to complement, not conflict with,
current NH EMS Protocols**

The following guidelines are recommended for the AVPU assessment of infants less than six months of age:

A – alert – awake with eyes open, moving, vocalizing as a normal infant.

V – verbal – asleep, but opens eyes, moves and vocalizes to voice or touch/handling

P – pain – opens eyes, moves, or vocalizes to painful stimulation (such as a pinch)

U – unresponsive – does not open eyes, move or vocalize (or in very young babies with eyes open does not show any facial expression such as grimacing) to any stimulation

MEDICAL CONTROL AND MEDICAL DIRECTION

I. DESCRIPTION

On-line medical control is the medical advice and instruction that is verbally provided by qualified physicians to prehospital emergency medical personnel while providing emergency medical care. Typically, emergency medical personnel contact medical control to report the patient's chief complaint, assessment findings and request orders regarding patient treatment.

Off-line medical direction is the medical supervision that a qualified physician provides pre-hospital personnel and services, as evidenced by medical standing orders and protocols, to be used by emergency medical personnel within specific situations. Pre-hospital medical directors are additionally responsible for establishing and monitoring quality assurance programs and activities.

II. STANDARDS

The New Hampshire Trauma System, as a component of the NH Division of Fire Standards and Training and EMS, provides for appropriate on-line medical control and standardized protocols for the pre-hospital management of major trauma patients.

Trauma teams at the trauma hospitals should be activated prior to patient arrival and should be based on uniformly adopted field triage criteria and guidelines as well as the judgment of emergency department staff. Prehospital providers are encouraged to suggest or request a trauma team activation as part of their prearrival report for those patients that meet the appropriate criteria.

Every NH EMS agency is required to have a medical resource hospital which agrees to provide medical direction. Pre-hospital medical direction should be provided by physicians qualified in emergency medical services in conjunction with approved EMS protocols. Pre-hospital medical directors should also be responsible – along with EMS agency leadership - for establishing and monitoring continuous quality improvement programs and activities.

HELICOPTER TRANSPORT

I. DESCRIPTION

Helicopter transport is the provision of advanced life support equipped helicopter services to major trauma victims. This service is appropriate when the time to definitive care for seriously injured patients is prolonged because of distance, or the appropriate level of prehospital resources is not available.

II. STANDARDS

The provision of trauma helicopter services is a critical component of the New Hampshire Trauma System. Trauma helicopter services are necessary because of the large geographical area of the state, the adverse impact that long ground transport times have on major trauma patients and the benefit of direct access to definitive trauma care. In rural areas transporting patients to distant hospitals by ground ambulance reduces the number of rescue vehicles and personnel that would otherwise be available in their service area.

Transfers from ground ambulance to air ambulance shall occur at the closest appropriate landing site including hospital heliports, airports, or unimproved landing site at or near the incident location (if deemed safe per pilot discretion). In cases where a hospital heliport is used strictly as the ground to air ambulance transfer point, no transfer of care to the hospital is implied or should be assumed by hospital personnel, unless specifically requested by the providers.

The provision of scene helicopter response can, in the appropriate circumstance, significantly reduce the time from onset of injury to definitive surgical care. EMS agencies must ensure that their providers are competent in the procedures and protocols for appropriate identification of patients (as found in NH EMS protocols) needing helicopter transport. Pre-hospital services must also ensure the availability of personnel who are competent in assisting helicopter personnel in safe landings and take offs.

Air medical transport units will have a structured air medical safety educational program in place to train EMS personnel in safety practices when interfacing with air medical transport. Air medical transport programs will have a structured air medical education curriculum for medical crew members and an ongoing performance improvement and patient safety program.

In addition to helicopter scene flights for trauma, it must be emphasized that air medical transport also plays a significant role in the interfacility transport of trauma patients who are transferred from a community hospital to tertiary care.

HUMAN RESOURCES

I. DESCRIPTION

This section deals with the type, qualifications and number of pre-hospital personnel providing service to major trauma patients. This section also deals with the trauma related training of pre-hospital personnel. Pre-hospital trauma training programs generally use a standardized curriculum for each level of EMS personnel. Professional training of pre-hospital personnel involves initial training, continuing education and refresher courses that are regularly available to all emergency medical services personnel.

II. STANDARDS

There are a variety of different models of providing prehospital care in New Hampshire. Emergency Medical Services are provided by full-time career EMS personnel in many areas, particularly urban, small cities and suburban areas, while there are a substantial number of volunteer providers in rural areas. There are also variations in the level of EMS providers: Medical First Responders, Emergency Medical Technician – Basic, EMT-Intermediate, and Paramedic. Decisions regarding the provision of EMS to a community are made at the local level. There is no statewide mechanism in New Hampshire to identify the optimal number and level of EMS providers in any given area, nor is there a mechanism to facilitate optimal staffing or positioning of vehicles.

Prehospital trauma training programs will use a national standardized curriculum for each level of EMS personnel. Professional training of pre-hospital personnel based on standardized curricula focuses on assessment, patient care and transportation, proper equipment use and maintenance, personal health and safety.

Stand-alone trauma courses such as Prehospital Trauma Life Support (PHTLS) and Basic Trauma Life Support (BTLS), and Pediatric Education for Prehospital Providers (PEPP) are a desirable addition to trauma education in NH. The NH Trauma System advocates for EMS personnel to participate in these educational programs and provides a mechanism for informing state providers about pending courses via the NH Division of Fire Standards and Training and EMS website – Course and Exam Schedule. These programs should be routinely monitored and evaluated and must be taught by qualified instructors.

All initial EMS education, refresher training and stand alone courses regarding trauma should include considerations for the assessment and treatment of injured children.

HOSPITAL TRAUMA SERVICES

I. DESCRIPTION

This section describes the role of New Hampshire hospitals in the New Hampshire Trauma System and the standards and process of participation. It is recognized that all NH acute care hospitals provide trauma care services to persons incurring a traumatic injury. It is expected that any hospital with emergency service capability will be capable of providing stabilization of adult and pediatric trauma patients during the acute and emergent course of their injury. Based on the patient's level of acuity and the capability of the hospital, the patient may need to be transferred to a facility with a more comprehensive capability of care. This transfer must be done in the timeliest manner possible.

The NH Trauma System encourages relationships between hospitals providing regional trauma care (i.e. a Level I trauma hospital) and community hospitals, particularly rural hospitals. Improved communications between hospitals can result in a quicker process for patient transfer.

II. STANDARDS

A. OVERALL SYSTEM DESIGN

The design of the New Hampshire Trauma System is based on the concept of inclusion of all providers of care to trauma victims within the system. All of the hospitals in New Hampshire have historically provided care to major trauma victims – including children - although the volume of admissions varied from facility to facility. The design of the system is to encourage the active participation of all New Hampshire hospitals in the system.

The goal of the system is to facilitate the treatment and admission of severely injured trauma patients to Level I or Level II trauma hospitals and the stabilization, resuscitation and rapid transfer of severely injured trauma from the local and rural trauma hospitals. Pre-hospital service providers will be directed to transport severely injured trauma victims to those hospitals with the verified capability to provide the appropriate level of trauma service.

All hospitals regardless of the level of active participation in the NH Trauma System will be encouraged to participate in trauma system education and training programs.

Level I and Level II trauma hospitals should assume a leadership role and be prepared to support the other components of the trauma system through education, coordination and performance improvement activities, and medical direction of pre-hospital personnel.

B. ROLE OF OUT-OF-STATE TRAUMA CARE FACILITIES

The current role of out-of-state specialty care facilities, such as Level I adult and pediatric trauma centers in Boston, Massachusetts and Portland, Maine, regional burn centers and re-implantation facilities will continue. The current volume of New Hampshire residents that incur significant burn injuries and re-implantation services is generally low.

When New Hampshire residents are transferred to out-of-state facilities for specialty trauma care, the out-of-state facilities should be requested to provide data and information detailing patient progress and outcome. This information should be provided to the referring facility and to the statewide trauma quality management program.

C. PROCESS OF PARTICIPATION

The guidelines for hospital participation in the trauma system should encourage the active participation of the New Hampshire acute hospitals.

1. Guiding Principles

- ◆ The first guiding principle is that major and severely injured adult and pediatric patients must be transported and treated at hospitals that have the clinical capability to effectively treat the full extent of their injuries. Severely injured trauma patients require the services of organized trauma teams composed of qualified physicians and health professionals having appropriate equipment and supplies.
- ◆ The second guiding principle is the concept of inclusion of all hospitals as active participants in the trauma system. Historically, all New Hampshire hospitals with an emergency department have provided care to trauma patients. Each hospital will be classified according to its capability to provide trauma services. This classification system should identify the capability and limitations of each acute care hospital in a manner appropriate for pre-hospital personnel.
- ◆ The third guiding principle is that hospitals should only admit trauma patients that are within the capability of the facility to provide definitive treatment. When this capability is exceeded by the patient's severity of injury, the hospital should transfer the patient to a higher level facility.
- ◆ The fourth guiding principle is that every acute care hospital should have, at a minimum, the capability to stabilize, resuscitate and rapidly transfer major or severely injured trauma patients.
- ◆ The fifth guiding principle is that all hospitals have the opportunity to increase or enhance their capability to provide trauma services.

REQUEST FOR PARTICIPATION

1. Step One: Request for Participation

Each acute care hospital not actively participating in the NH Trauma System will be periodically requested to identify their level of desired participation. This communication will include the following:

- A document explaining the trauma system and the participation process
- A copy of the hospital standards for each level of participation
- A statement for the requested level of participation
- A self-survey assessment tool

2. Step Two: Facility Assessment

Each hospital requesting trauma system participation will be site-visited and assessed by one of the Trauma Medical Review Committee's Site Visitation Teams within one year of submission of the completed participation package.

The Site Visitation teams, to include at least a physician, trauma nurse and the NH Division of Fire Standards and Training & EMS Trauma Coordinator, will perform the following activities:

- Visit the hospital and verify the hospital's capability to provide trauma services at the level requested by the hospital.
- Compile the results of the on-site assessment
- Provide consultative assistance and information to the hospital and its medical staff

Hospitals seeking assignment as a trauma hospital must select a level of assignment for both adult trauma care and pediatric trauma care. The hospital can choose different levels for adult and pediatric assignment, but a hospital must meet at a minimum Level IV pediatric trauma standards.

Hospitals may voluntarily choose to pursue verification by the American College of Surgeons (ACS) Committee on Trauma. Hospitals successfully acquiring ACS verification may request assignment in the NH Trauma System at that level. The Trauma Medical Review Committee may waive the requirement for a site visit as part of the application process for hospitals meeting ACS criteria.

3. Step Three: Determination of Level of Participation

Following the site visit at the hospital, the Trauma Medical Review Committee will review all documents submitted by the hospital and the site visitation team's reports, findings and recommendations and review any additional information or testimony provided by the hospital or its medical staff. The TMRC will consider the application and approve or advise the hospital of deficiencies identified. If deficiencies are resolved within one year, the TMRC may elect to hold a focused review instead of a full site visit, and pending a favorable report, the initial application may be reconsidered.

If approved, the TMRC will recommend to the Commissioner a level of participation for a period of up to five years. The Commissioner or his designee will issue a document to the hospital with notification to pre-hospital medical control physicians and pre-hospital providers identifying the hospital's level of assignment.

If the hospital subsequently wishes to change its assignment and participation status, the hospital can reapply at any time during its term.

4. Step Four: Appeal Process

Any hospital that does not agree with and challenges the Committee's recommended level of classification and participation can, at its own expense, have its facility evaluated by the American College of Surgeon's (ACS) Committee on Trauma's representatives.

The hospital can submit the findings and recommendations of the ACS Committee on Trauma's site visit to the Trauma Medical Review Committee. The Trauma Medical Review Committee will consider the ACS findings in the Committee's recommendation to the Commissioner.

Pre-Hospital Impact

Pre-hospital providers and their medical control physicians will be directed by the NH Division of Fire Standards and Training and EMS to preferentially transport major and severely injured trauma patients, in accordance with statewide protocol, to the hospitals with capability to provide the appropriate level of trauma service.

Revocation of Assignment

Any hospital that is found to be out of compliance with the requirements of this plan will be notified of the deficiency. Failure to take corrective steps within six months to address the deficiency will risk the loss of assignment. Hospitals that lose their assignment for failure to correct deficiencies will be required to re-apply if active participation in the NH Trauma System is desired at a later date. Notice of the loss of assignment will be communicated in writing to the hospital, prehospital medical control physicians and prehospital providers.

Renewal of Assignment

Prior to the expiration of the Trauma Hospital Assignment, the assigned hospital will communicate with the NH Department of Safety, Division of Fire Standards and Training and Emergency Medical Services as to its intentions of continuing as an assigned trauma hospital. If a hospital wishes to upgrade to a higher level, a full evaluation and site review will be required. For those hospitals seeking renewal at the same level, the Trauma Medical Review Committee may at their discretion require a full evaluation and site visit or a modified application and evaluation process.

III. INTERHOSPITAL TRAUMA PATIENT TRANSFER

DESCRIPTION

The interfacility transfer of major trauma patients will be necessary in those situations where the severity of the patient's injury exceeds the capacity of the initial receiving hospital and require expeditious transfer to a higher level trauma hospital. While NH EMS trauma and triage and air medical transport protocols are intended to route severely injured patients directly to the highest appropriate level of trauma hospital, this is not always feasible and patients are transported to the closest hospital.

STANDARDS

Interfacility transfer is enhanced by each hospital adopting guidelines regarding (1) identification of patients who will benefit from transfer and (2) how and when a patient will be transferred. Identification of patients should be based on a defined set of criteria. The process of transfer will be in accordance with Federal EMTALA and COBRA requirements.

In addition to the prehospital triage criteria discussed earlier, hospital clinicians should consider the following list of examples of physiological, anatomical, and other criteria that identify patients at high risk of dying or permanent disability. Depending on the hospital's assigned level of capability, such trauma patients should be considered for PROMPT transfer.

ADULTS AND PEDIATRIC CRITERIA

- Torn thoracic vessel or suspected mediastinal vascular injury
- Penetrating wounds to the central chest area (i.e. cardiac injury)
- Bilateral pulmonary contusion with PaO₂ to FiO₂ ratio less than 200
- Major abdominal vascular or visceral injury
- Unstable pelvis fracture
- Fracture or dislocation with loss of distal pulses
- Penetrating injury or open fracture of the skull
- Glasgow Coma Score < 12 or lateralizing neurological signs
- Deterioration in GCS of 2 or more
- Significant spinal fracture or spinal cord deficit
- Severe blunt chest injury (i.e. flail segment)
- Open or multiple long bone fracture
- Significant torso injury with significant comorbid disease, such as:
 - Coronary artery disease
 - COPD
 - Type I diabetes mellitus
 - Immunosuppression
 - Extremes in age (pediatric and geriatric)

PEDIATRIC SPECIFIC CRITERIA

- Pediatric trauma score of <9
- Children requiring Intensive Care

IV. TELEMEDICINE

In consideration of telemedicine in specialty surgical care, it is recognized that trauma care and telemedicine are evolving. Some of the elements and technology are available now. The TMRC defines a trauma telemedicine program as one which addresses exceptions to the 24/7 accessibility to particular specialists (such as neurosurgeons or orthopedic surgeons) by activating a trauma telemedicine specialist. The process must be a collaboration between the trauma surgeon and the telemedicine consultant to determine whether the patient has an injury that requires transfer to another facility, or if it is safe to admit the patient to the originating hospital with observation by the telemedicine specialist in collaboration with medical staff at the originating hospital.

Elements to be considered would be:

- There is video technology and imaging transmission to enable a real-time consultation with an applicable specialist, such as a neurosurgeon.
- There is a formal trauma telemedicine program in which the hospital commits to the practice of admitting patients in consultation with the specialist as medically indicated.
- Trauma surgeons, intensivists, and hospitalists at the hospital fully cooperate with the telemedicine program.

- A performance improvement and patient safety process specific to the trauma telemedicine program is in place.
- A hospital wishing to implement a trauma telemedicine program must have the program approved by the Trauma Medical Review Committee.

V. ADULT FACILITY STANDARDS

LEVELS OF PARTICIPATION

In order to encourage maximum participation there will be four levels of assignment for adult trauma service hospitals. These four levels are the following:

LEVEL I: A hospital satisfying this level provides the highest level of care for patients with complex traumatic injuries that present directly to the hospital's emergency department or by interfacility transfer. The hospital is a regional resource that treats a significant number of seriously injured patients and is responsible for outreach, accredited education and is committed to research in trauma management.

LEVEL II: A hospital that has the resources to provide a high level of care for patients with complex injuries. The hospital has essentially all the surgical specialty providers as a Level I, on-call and promptly available 24/7. A Level II provides definitive care on a regional basis for complex trauma patients, but transfers the most specialized of trauma patients to a Level I or specialty facility (i.e. burn center).

LEVEL III: A hospital that provides trauma care for a local catchment area. Depending on the hospital's resources (such as neurosurgery) some Level III trauma hospitals are able to care for complex trauma patients, but the expectation of most Level III facilities for major trauma patients is stabilization and prompt transfer to a Level I trauma hospital.

LEVEL IV: A hospital that provides 24-hour emergency services. This level of trauma hospital is expected to resuscitate, stabilize, and transfer major trauma patients to a higher level facility. This facility will admit only those patients who are determined to have injuries that do not meet criteria for transfer.

UNASSIGNED HOSPITAL: A hospital that provides a 24-hour emergency department but has not voluntarily sought assessment or assignment as part of the NH Trauma System or has not successfully received approval following an application.

V. HOSPITAL STANDARDS REQUIREMENTS FOR ADULTS

The following section is intended to serve as a checklist of the standards required for the different levels of adult trauma hospital. Active trauma hospitals within the NH trauma System may use this section to continually verify that they meet the requirements of the level of assignment currently held. Unassigned hospitals considering active participation in the NH Trauma System should use this section as a self-assessment of their ability to meet the requirements, or in which areas they need to improve to successfully meet the requirements.

Refer to the pediatric trauma hospital standards beginning on page 44 for pediatric requirements.

DEFINITIONS FOR THE FOLLOWING TABLES

Promptly Available - For the highest level of trauma team activation, providers may respond on an on-call basis, but must meet the following conditions:

Trauma Surgeon - for a Level I and II the maximum allowable time for trauma surgeon arrival is 15 minutes (tracked from patient arrival in the ED) with 80% compliance tracked by the PIPS program. For Level III and IV the maximum allowable time is 30 minutes using the same measures.

For all other trauma team members - in all trauma hospital levels the maximum allowable time of arrival for members of the trauma team is 30 minutes from activation.

For other providers that are required by the hospital standards to be promptly available, but are not members of the trauma team, promptly available is defined as arrival within 30 minutes of consultation by the trauma team leader.

While the PIPS program is required to monitor timely arrival of the anesthesia provider, monitoring of other medical providers is not mandatory (but is encouraged). Recurring problems regarding prompt response of providers must be addressed in the PI process.

E = Essential – This is a mandatory requirement for the level of trauma hospital indicated.

D = Desired – This criteria is not mandatory, but is desirable for the level of hospital indicated.

ADULT TRAUMA SERVICE	LEVELS			
	I	II	III	IV
Hospital has the written commitment of the institutional governing body and the medical staff to be an assigned trauma hospital	E	E	E	E
There is a multidisciplinary peer review Trauma Performance Improvement and Patient Safety (PIPS) Program with participation from general surgery, orthopedic surgery, neurosurgery, emergency medicine, anesthesia, administration and nursing services.	E	E	E	E
Hospital has an organized trauma service that has formal responsibility for the management and coordination of the care of multiple-system or major injury patients	E	E	D	D
There are guidelines for the initial triage of trauma patients	E	E	E	E
There are policy and procedures for the pre-arrival activation of the trauma team based on prehospital report	E	E	E	E
Hospital has written, well defined guidelines for the transfer of trauma patients to other facilities			E	E
Decision to transfer an injured patient to a specialty care facility is based solely on the needs of the patient.	E	E	E	E
Published on-call schedules are maintained for surgeons, neurosurgeon (<i>if applicable</i>), orthopedic surgeons and other specialists	E	E	E	E
Hospital complies with NH EMS protocols regarding air medical transport	E	E	E	E

ADULT TRAUMA PROGRAM DIRECTOR	LEVELS			
	I	II	III	IV
There is a physician Trauma Service Director	E	E	E	E*
The director is a board certified general surgeon	E	E		
The director is a board certified physician with demonstrated competence in trauma care			E	E
The trauma service director is current in ATLS	E	E	E	E
The director participates in the instruction of trauma surgeons and other providers	E	E	E	E
The director is responsible for the trauma PIPS Program	E	E	E	E
The director has administrative authority to evaluate trauma team members and provide on- going education services.	E	E	E	E

ADULT TRAUMA TEAMS	LEVELS			
	I	II	III	IV
The trauma service has an organized trauma response	E	E	E	E
The trauma response team is directed by a general surgeon or emergency physician	E	E	E	E
Written guidelines for the composition and activation of the trauma team are in place	E	E	E	E
A log of trauma team activations is included in the trauma registry	E	E	E	E
Trauma team members will satisfy credentialing requirements as specified in each clinical specialty section	E	E	E	E
When a hospital uses a two-tiered trauma team activation policy, the criteria for graded activation are clearly defined by the hospital and continuously evaluated by the trauma PIPS program and the highest level of activation requires the participation of a general surgeon.	E	E	E	E

ADULT TRAUMA COORDINATOR	LEVELS			
	I	II	III	IV
There is a trauma coordinator	E	E	E	E
The trauma coordinator is actively involved in clinical activities-establishing protocols, monitoring care and assisting trauma staff	E	E	E	E
The trauma coordinator participates in the education of professional staff, continuing education and community education and injury prevention efforts	E	E	E	D
The trauma coordinator participates in research activities such as protocol design, data collection, analysis and reporting	E	E	D	D
The trauma coordinator participates in performance improvement activities, developing audit filters, audits and case reviews	E	E	E	E
The trauma coordinator is responsible for the trauma registry	E	E	E	E

ADULT GENERAL SURGERY	LEVELS			
	I	II	III	IV
The general surgeon who participates in the trauma team is board certified or eligible (1) or is an ACS fellow	E	E	E	E
The general surgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	E
The general surgeon is in-house 24 hours-a-day	E*			
The general surgeon is on-call and promptly available (2)		E	E	E
The trauma surgeon on call is dedicated to the trauma hospital while on duty	E	E	E	D
** BY PGY4 or higher surgical residents (with attendings promptly available)				
(1) Board eligible surgeons must become board certified within five years				
(2) "Promptly available" means for a Level I and II the maximum allowable time of surgeon arrival is 15 minutes, tracked from patient arrival in the ED, with 80% compliance tracked by PIPS program. For Level III and IV the maximum allowable time is 30 minutes using the same measures.				

Note – “Appropriately credentialed” is defined as:
 ATLS certified or,
 Sixteen hours over a two year period of trauma focused CMEs.

ADULT NEUROSURGERY	LEVELS			
	I	II	III	IV
Neurosurgeons who care for trauma patients are board certified or eligible neurosurgeons (1)	E	E	E	E
There is a neurosurgeon in-house 24 hours a day	E*	D		
There is a neurosurgeon on-call and promptly available 24 hours a day		E	D	
The facility has a written plan on how traumatic brain injured patients are assessed, treated and/or transferred, with written transfer agreements in place			E	E
The neurosurgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	
“*” By PGY4 or higher neurosurgical residents (with attendings promptly available)				
“(1)” The initial stabilization and diagnostic procedures may be performed by physicians with special competence in the care of patients with neuro-trauma				
<u>Note</u> – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				

ADULT ORTHOPEDIC SURGERY	LEVELS			
	I	II	III	IV
Orthopedic surgeons who care for trauma patients are board certified or eligible	E	E	E	
An orthopedic surgeon is on-call and promptly available	E*	E	E	D
An orthopedic surgery liaison to the PIPS program is designated	E	E	E	E
The orthopedic surgeon is credentialed to practice in the facility and meets trauma credentials (note)	E	E	E	E
“*” By PGY4 or higher orthopedic residents (with attendings promptly available)				
<u>Note</u> – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				

ADULT EMERGENCY MEDICINE	LEVELS			
	I	II	III	IV
The emergency department is staffed by board certified physicians with special competence in the care of the critically injured patient (Note *1)	E	E	E	D
The emergency physician is in-house 24 hours a day	E	E	E	D
The emergency department may be staffed in-house 24 hours a day by a physician or physician assistant or nurse practitioner with a full-time commitment to emergency medicine (Note *3)				E

Note * 1 Definition of Emergency Physician with special competence in the care of the critically injured patient: 1. Board certified in emergency medicine OR 2. Board certified in a primary specialty, (family medicine, internal medicine, pediatrics or OB/GYN) with full-time commitment to emergency medicine and maintains current status as an ATLS provider.				
The emergency physician is appropriately credentialed to practice in the facility and meets trauma credentials (Note * 2)	E	E	E	E
Note * 2 – “Appropriately credentialed” is defined as: ATLS certified or, Sixteen hours over a two year period of trauma focused CMEs.				
Note * 3 – A midlevel provider (physician assistant, nurse practitioner) who provides care to trauma patients must practice under the supervision of the emergency physician and must meet physician trauma credentials.				
An emergency medicine liaison to the PIPS program is designated	E	E	E	E

ADULT ANESTHESIOLOGY	LEVELS			
	I	II	III	IV
Anesthesiologists who care for trauma patients are board certified or eligible	E	E	E	E
There is an anesthesiologist in-house 24 hours a day	E*	D	D	D
There is an anesthesiologist on-call and promptly available 24 hours a day.		E	E* *	E* *
An anesthesiology liaison to the PIPS program is designated	E	E	E	E
“*” By PGY4 or higher anesthesiology residents (with attendings promptly available)				
“**” May be performed by certified nurse anesthetist				

ADULT SURGICAL SUBSPECIALTIES On Call and Promptly Available	LEVELS			
	I	II	III	IV
There are signed agreements which commit the following surgical and medical specialties to be on-call and promptly available:				
Hand Surgery	E	D	D	
Microvascular Surgery (re-implantation/flaps)	E*	D		
Obstetric/Gynecologic Surgery	E	E	D	D
Ophthalmic Surgery	E	E	D	
Oral/Maxillofacial Surgery	E	E	D	
Plastic Surgery	E	E	D	
Thoracic Surgery	E	E	D	
Urologic Surgery	E	E	D	
There is an identified process utilized in the ER or by the trauma service to alert the above-listed physician specialties to respond	E	E	E	E
“*” If not available transfer guidelines must be in place				

ADULT NON-SURGICAL SUBSPECIALTIES On-Call and Available for Consultation	LEVELS			
	I	II	III	IV
Cardiology	E	E*	D	
Gastroenterology	E	E*	D	
Infectious Disease	E	E*	D	
Internal Medicine	E	E	E**	E**
Nephrology	E			
Pediatrics				
Pulmonary Medicine	E	E		
There is an identified process utilized in the ER or by the trauma service to alert the above-listed physician specialties to respond.	E	E	E	E
“*” The consultants may be from another hospital				
“**” Internal medicine or family practice physicians				

ADULT EMERGENCY DEPARTMENT PERSONNEL	LEVELS			
	I	II	III	IV
Designated physician director	E	E	E	E
Physicians with special competence in care of critically injured and a designated member of the trauma team	E	E	E	E
In-house 24 hours a day	E	E	E	E
Registered Nursing personnel must hold current TNCC certification or show evidence of an average of 2 hours of trauma education per year	E	E	E	E
In emergency department and immediately available	E	E	E	E
If paramedic providers are utilized, must hold current certification in PHTLS or BTLIS	E	E	E	E

ADULT OPERATING ROOM STAFF AVAILABILITY	LEVELS			
	I	II	III	IV
In-house operating room staff immediately available 24 hours a day	E			
On-call and promptly available		E	E	E
A documented method for prompt mobilization of consecutive OR teams for additional trauma patients	E	E	D	D
Registered nurse available in OR during surgery	E	E	E	E
Equipment for all ages				
Cardiopulmonary bypass capability	E			
Operating microscope	E			
Craniotomy instruments	E	E	D	

ADULT POST ANESTHESIA RECOVERY UNIT	LEVELS			
	I	II	III	IV
Registered nurses and other essential personnel				
Immediately available 24 hours a day	E	E		
On-call and promptly available			E	E

ADULT ICU PERSONNEL	LEVELS			
	I	II	III	IV
There is a designated surgical director of the ICU	E	E	D	D
The ICU is staffed by physicians board certified or board eligible in critical care, pulmonary medicine, cardiology or surgery	E	E	E	
An ICU physician is in house 24-hours a day	E*			
An ICU physician is on-call and promptly available 24 hours a day		E	E	D
There is an ICU physician liaison to the trauma PIPS program	E	E	E	E
The ICU is staffed by registered nurses with evidence of critical care training	E	E	E	D
ICU nurses who care for trauma patients must hold current TNCC certification or show evidence of an average of 2 hours of trauma education per year	E	E	E	D
“*” May be performed by PGY4 or higher residents with attendings promptly available				
A respiratory therapist is onsite 24 hours	E	E		
A respiratory therapist is on-call and promptly available			E	D
The hospital has patient and family services	E	E	E	E

OTHER ADULT TRAUMA-RELATED PROGRAMS	LEVELS			
	I	II	III	IV
The hospital has acute hemodialysis capability	E			
The hospital has acute hemodialysis capability or a transfer agreement with a dialysis center		E	E	D
The hospital has written guidelines for burn center referral and transfer criteria	E	E	E	E

ADULT RADIOLOGICAL SPECIAL SERVICES	LEVELS			
	I	II	III	IV
Radiologists are promptly available, in person or by teleradiology, when requested, for the interpretation of radiographs, performance of complex imaging studies.	E	E	E	E
An interventional radiologist is on-call and promptly available 24 hours a day	E	E		
The hospital has an in-house radiology technician 24-hours a day	E	E		
The hospital has a radiology technician on-call and promptly available 24 hours a day			E	E
Angiography is available 24 hours per day	E	E		
Sonography is available 24 hours per day	E	E		
Computed tomography and conventional radiography are available 24 hours a day	E	E	E	E
There is a CT Technician in-house 24-hours a day	E			
There is a CT Technician on-call & promptly available 24 hours a day		E	E	E
A radiology liaison to the PIPS program is designated	E	E	E	E
MRI capability is available 24 hours per day. MRI technician is on call and promptly available	E			

ADULT REHABILITATION SERVICES	LEVELS			
	I	II	III	IV
The hospital has acute rehabilitation services within its facility	E	E	E	E
The hospital has social services.	E	E	E	E
The hospital has occupational therapy services.	E	E	E	
The hospital has speech therapy services.	E	E	E	
The hospital has a mechanism in place to transfer patients to a freestanding rehabilitation hospital.	E	E	E	E

ADULT CLINICAL LABORATORY SERVICES	LEVELS			
	I	II	III	IV
Clinical laboratory services are available 24 hours a day	E	E	E	E
Able to conduct standard analyses of blood, urine, and other body fluids	E	E	E	E
Able to conduct blood typing and cross-matching	E	E	E	E
Able to conduct coagulation studies	E	E	E	E
The blood bank must have an adequate supply of red blood cells, fresh frozen plasma, platelets, cryoprecipitate, and appropriate coagulation factors to meet the needs of injured patients	E	E	E	E
Able to determine blood gases and PH determination	E	E	E	E
Able to conduct microbiology studies	E	E	E	E
Able to conduct drug and alcohol screening	E	E	E	E

ADULT PERFORMANCE IMPROVEMENT & PATIENT SAFETY (PIPS)	LEVELS			
	I	II	III	IV
The facility demonstrates a clearly defined PIPS program for the trauma population	E	E	E	E
The PIPS program is supported by a reliable method of data collection that consistently gathers valid and objective information necessary to identify opportunities for improvement	E	E	E	E
Scheduled multi-disciplinary trauma review, to include case reviews and system process issues. Representatives of the NH Trauma Medical Review Committee may periodically participate in reviews.	E	E	E	E
The program is able to demonstrate that the trauma registry supports the PIPS process	E	E	E	E
The process of analysis includes multidisciplinary review	E	E	E	E
The process of analysis occurs at regular intervals to meet the needs of the program	E	E	E	E
The results of analysis define corrective strategies	E	E	E	E
The results of analysis and corrective strategies are documented	E	E	E	E
The trauma program is empowered to address issues that involve multiple disciplines	E	E	E	E
The hospital complies with all criteria/process measures for PIPS review as required by the NH Trauma Medical Review Committee	E	E	E	E

TRAUMA REGISTRY	LEVELS			
	I	II	III	IV
Trauma registry data are collected and analyzed	E	E	E	E
Data elements required by the NH Trauma Medical Review Committee are submitted	E	E	E	E
Data is submitted to the NTDB	E	E	D	D
The facility uses the registry to support the PIPS process	E	E	E	E
The trauma registry has at least 80% of the trauma cases entered within 60 days of discharge	E	E	E	E
The trauma program ensures that trauma registry confidentiality measures are in place	E	E	E	E
There are strategies for monitoring data validity for the trauma registry	E	E	E	E

INJURY PREVENTION/ PUBLIC EDUCATION	LEVELS			
	I	II	III	IV
The hospital participates in annual state or local injury prevention efforts involving public education, providing effective injury prevention devices and advocating for environmental and/or policy changes to reduce injuries	E	E	E	E
The hospital monitors patient data to determine areas in which to focus injury prevention efforts	E	E	E	E
The hospital monitors patient data to monitor progress of prevention programs	E	E	E	E
The hospital conducts injury prevention research	E			

TRAUMA RESEARCH PROGRAM	LEVELS			
	I	II	III	IV
Organized program with designated director	E			
Regular meeting of research group	E			
Evidence of productivity	E			
Proposals reviewed by IRB	E			
Presentations at local/regional/national meetings	E			
Publications in peer-reviewed journals	E			

CONTINUING EDUCATION	LEVELS			
	I	II	III	IV
Programs of continuing education provided by hospital for:				
Physicians	E	E	E	E
Nurses	E	E	E	E
Allied health care professionals / out of hospital providers	E	E	E	E
OUTREACH PROGRAM				
The hospital provides a process for two way communication with other	E	E		

hospitals for trauma consultations with physicians, and feedback regarding trauma transfers from community hospitals				
--	--	--	--	--

ORGAN PROCUREMENT PROGRAM	LEVELS			
	I	II	III	IV
The hospital has active participation with the region's organ procurement organization	E	E	E	E

DISASTER PLANNING AND MANAGEMENT	LEVELS			
	I	II	III	IV
The hospital meets the disaster-related requirements of the Joint Commission or Centers for Medicare and Medicaid Services, and has a written disaster plan	E	E	E	E
A representative of the trauma committee is a member of the hospital's disaster committee.	E	E	E	E

VII. PEDIATRIC FACILITY STANDARDS

LEVELS OF PARTICIPATION

Seriously injured children present a physiological complexity that is different than that of adults. Medical providers must be diligent in preparations to effectively deal with seriously injured children, despite the infrequency of such events. A regionalized approach to pediatric trauma care is sensible, but geographical access to such resources in NH must be considered. Rural hospitals play an important role in the NH Trauma System. All hospitals including those with limited pediatric capability will be called upon to resuscitate severely injured children.

Although all acute care hospitals must be capable of resuscitation and stabilization, comprehensive pediatric services are limited to a few regional pediatric hospitals. As such, an important part of the pediatric trauma system is the development of well-defined written guidelines for the rapid identification of injured children exceeding a hospital's capability and for streamlining the process for transfer of pediatric trauma patients to facilities capable of providing comprehensive pediatric care.

PEDIATRIC TRAUMA SERVICE COMPONENT

In order to encourage maximum participation there will be four levels of assignment for pediatric trauma service hospitals in New Hampshire. The following descriptions provide a global overview of the desired roles of the four levels. For more specific information regarding the resources required of the four levels refer to the pediatric hospital standards.

Pediatric Level I – This hospital provides the most comprehensive level of care and has a pediatric intensive care unit. The facility will be capable of providing comprehensive specialized pediatric medical and surgical care to all acutely ill and injured children. The Level I Pediatric Trauma Hospital will be responsible for serving as a regional referral center for the specialized care of pediatric patients, or in special circumstances will provide safe and timely transfer of children to other facilities for specialized care.

Pediatric Level II – This hospital will have a defined separate pediatric inpatient service and a department/division of pediatrics within the medical staff structure. A Level II facility will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing, circulation and disability), and will also provide ongoing inpatient care or appropriate transfer to a Level I pediatric critical care center

Pediatric Level III - This hospital will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing and circulation), and will have clearly defined capabilities for the management of minor to moderate pediatric inpatient problems.

Pediatric Level IV - This hospital will be capable of identifying those pediatric patients who are critically ill or injured, stabilizing pediatric patients (including the management of airway, breathing and circulation), and providing appropriate transfer to a definitive care facility. A Level IV hospital will have limited pediatric inpatient admission capability for pediatric trauma.

The **minimum** level of pediatric capability for any hospital assigned within the NH Trauma System is a Pediatric Level IV.

PEDIATRIC TRAUMA SERVICE	LEVELS			
	I	II	III	IV
The hospital has the written commitment of the institutional governing body and the medical staff to be an assigned pediatric trauma hospital	E	E	E	E
The multidisciplinary peer review Trauma Performance Improvement and Patient Safety (PIPS) Program includes participation of pediatric representation	E	E	E	E
The hospital has an organized pediatric trauma service that has formal responsibility for the management and coordination of the care of multiple-system or major injury patients	E	E		
There are guidelines for the initial triage of pediatric trauma patients	E	E	E	E
The hospital has written, well defined guidelines for the transfer of pediatric trauma patients to other facilities	E	E	E	E

PEDIATRIC TRAUMA PROGRAM DIRECTOR	LEVELS			
	I	II	III	IV
There is a physician Pediatric Trauma Director	E	E	E	E
The director is a board certified pediatric surgeon	E	E		
The director is a board certified physician with demonstrated competence in pediatric trauma care	E	E		
The pediatric trauma director is current in PALS or APLS	E	E	D	D
The pediatric trauma director is responsible for the pediatric PIPS Program	E	E	E	E

PEDIATRIC TRAUMA COORDINATOR	LEVELS			
	I	II	III	IV
There is a pediatric trauma coordinator	E	E*		
Pediatric trauma coordinator is actively involved in clinical activities-establishing protocols, monitoring care and assisting trauma staff	E	E		
Pediatric trauma coordinator participates in education of professional staff, continuing education and community education and injury prevention efforts	E	E		
Pediatric trauma coordinator participates in research activities such as protocol design, data collection, analysis and reporting	E	E		
Pediatric trauma coordinator participates in performance improvement activities, developing audit filters, audits and case reviews	E	E		
* For Level II may combine both adult and pediatric responsibilities				

PEDIATRIC TRAUMA TEAMS	LEVELS			
	I	II	III	IV
There is an organized pediatric trauma response	E	E	E	E
The highest pediatric trauma activation level should be directed by a surgeon with pediatric expertise, designated and credentialed by the pediatric trauma director	E	E		
Written guidelines for the composition of and activation of the pediatric trauma team are in place	E	E	E	E

PEDIATRIC SURGERY	LEVELS			
	I	II	III	IV
The hospital has two pediatric surgeons on staff who are board certified or eligible and with pediatric surgery fellowship training	E	D		
The hospital has one pediatric surgeon on staff who is board certified or eligible and with pediatric surgery fellowship training	-	E		
A surgeon who meets pediatric trauma credentials (see note) is on call and promptly available 24 hrs a day	E	E	D	D
A pediatric surgery liaison to the PIPS program is designated	E	E		
The pediatric surgeon is appropriately credentialed to practice in the facility and meets pediatric trauma credentials (see note)				
<u>Note</u> – “Pediatric trauma credentials” are defined as: ATLS and PALS or APLS certified				

PEDIATRIC NEUROSURGERY	LEVELS			
	I	II	III	IV
The hospital has one Neurosurgeon who is board certified or eligible and with pediatric fellowship training	E	D		
The hospital has one neurosurgeon who is board certified or eligible and has demonstrated interest in pediatric trauma care	E	E		
A neurosurgeon is on call and promptly available 24 hours a day	E	E		
A pediatric neurosurgery liaison to the PIPS program is designated	E	E		

PEDIATRIC ORTHOPEDIC SURGERY	LEVELS			
	I	II	III	IV
The hospital has one orthopedic surgeon who is board certified or eligible and with pediatric fellowship training	E	D		
The hospital has one orthopedic surgeon who is board certified or eligible and has demonstrated interest in pediatric trauma care	E	E		
An orthopedic surgeon is on call and promptly available 24 hrs a day	E	E	D	
A pediatric orthopedic surgery liaison to the PIPS program is designated	E	E		

PEDIATRIC STANDARDS FOR EMERGENCY MEDICINE	LEVELS			
	I	II	III	IV
The hospital has two pediatric emergency physicians who are board certified or eligible and with pediatric emergency medicine fellowship training	E	D		
The hospital has one pediatric emergency physician who is board certified or eligible and with pediatric emergency medicine fellowship training	---	E		
A pediatric emergency medicine liaison to the PIPS program is designated	E	E		
The emergency department is staffed by board certified physicians with special competence in the care of the critically injured child (Note *1)	E	E	E	D
The hospital has an emergency physician in-house 24 hours a day	E	E	E	D
The emergency department may be staffed in-house 24 hours a day by a physician or physician assistant or nurse practitioner with full-time commitment to emergency medicine (Note *3)				E
<p><u>Note</u> * 1 - Definition of Emergency Physician with special competence in the care of the critically injured child:</p> <p>3. Board certified in emergency medicine OR</p> <p>2. Board certified in a primary specialty, (family medicine, internal medicine, pediatrics or OB/GYN) with full-time commitment to emergency medicine and maintains current status as an ATLS and PALS provider.</p>				
The emergency physician is credentialed to practice in the facility and meets appropriate pediatric trauma credentials (Note *2)	E	E	E	
<p><u>Note</u>* 2 – “Appropriately credentialed” is defined as:</p> <p>ATLS and PALS certified or,</p> <p>Four hours over a two year period of pediatric trauma focused CMEs. May be combined with overall 16 hours of trauma focused CME.</p>				
<p><u>Note</u> * 3– A midlevel provider (physician assistant, nurse practitioner) who provides care to trauma patients must practice under the supervision of an emergency physician and must meet physician trauma credentials.</p>				

Pediatric SUBSPECIALTIES On Call and Promptly Available	LEVELS			
	I	II	III	IV
There are signed agreements which commit the following credentialed pediatric surgical and medical specialties to be on call and promptly available:				
Pediatric Trauma Surgeon	E	E		
Pediatric Neurosurgeon	E	E		
Pediatric Intensivist	E	E		
Pediatric Orthopedic Surgeon	E	E		
Pediatric Cardiologist	E	D		
Pediatric Neonatologist	E	D		

Pediatric Neurologist	E	D		
Pediatric Anesthesiologist	E	D		
Pediatric Otolaryngologist	E	D		
Pediatric Radiologist	E	D		
Pediatric Hospitalist / Pediatrician			E	

PEDIATRIC STANDARDS FOR EMERGENCY DEPARTMENT	LEVELS			
	I	II	III	IV
The hospital has two or more identified pediatric areas with capacity & equipment for pediatric resuscitation	E	D	D	D
The hospital has one identified area with capacity & equipment for pediatric resuscitation	--	E	E	E
Registered Nursing personnel must hold current ENPC or PALS certification or show evidence of an average of 2 hours of pedi. trauma ed. per year	E	E	E	E
If paramedic providers are utilized, must hold current certification in PALS	E	E	E	E
Appropriate resuscitation equipment is located in ED (See Appendix C)	E	E	E	E

PEDIATRIC INTENSIVE CARE UNIT	LEVELS			
	I	II	III	IV
The hospital has a Pediatric Intensive Care Unit	E	E		
The PICU has a Medical Director who is board certified in Pediatrics & Pediatric Critical Care Medicine and with pediatric intensive care fellowship training	E	E		
The PICU is staffed by pediatric intensivists who are board certified or board eligible and with pediatric intensive care fellowship training	E	E		
A PICU physician is on call and promptly available 24 hours a day	E*	E*		
The PICU is staffed with registered nurses with evidence of pediatric critical care training: ENPC, PALS, or 2 hours of pediatric trauma education per year	E	E		
“*” May be performed by PGY4 or higher residents with attendings promptly available				

PEDIATRIC INPATIENT CARE SERVICE	LEVELS			
	I	II	III	IV
The hospital has a Pediatric Inpatient Care Service	E	E	E	
There is a Pediatric Dept. Chair or Pediatric Inpatient Director who is board certified in Pediatrics	E	E	E	
There are Pediatric hospitalists / pediatricians who are board certified or eligible in Pediatrics, credentialed by hospital, and current in PALS	E	E	E	
Unit nurses who care for pediatric trauma patients must hold current ENPC or PALS certification, or show evidence of 2 hours of pediatric trauma education per year	E	E	E	

PEDIATRIC SUPPORT & REHABILITATION SERVICES	LEVELS			
	I	II	III	IV
The hospital has acute pediatric rehabilitation services within facility	E	E		
There is a Child Life Specialist	E	E		
There is a child abuse policy & procedures	E	E	E	E

PEDIATRIC TRIAGE, TRANSFER, AND TRANSPORT	LEVELS			
	I	II	III	IV
The hospital has telephone consultation with a physician who is board certified/eligible in pediatrics or pediatric emergency medicine - available 24 hours per day	--	E	E	E
The hospital has written pediatric trauma transfer guidelines	E	E	E	E

APPENDIX A

MANDATORY PERFORMANCE IMPROVEMENT AND PATIENT SAFETY (PIPS) CRITERIA

The criteria for graded activation are clearly defined by the trauma center and continuously evaluated by the PIPS program.

For the highest level of activation the 80% compliance of the surgeon's presence in the emergency department is confirmed or monitored by PIPS (15 minutes for Level I and II; 30 minutes for Level III).

Trauma Deaths are systematically reviewed for quality of care, and assigned to one of the following categories: preventable, potentially preventable or non-preventable.

There is a PIPS review of all trauma patients who are transferred the appropriateness of the decision to transfer or retain major trauma.

The PIPS program documents the appropriate timeliness of the arrival of anesthesia services

The PIPS program evaluates operating room availability and delays
Discrepancies in diagnostic imaging interpretation for trauma are monitored through the PIPS program.

Effective date: _____

Supercedes: _____

APPENDIX B

Hospitals that are assigned within the NH Trauma System are required to collect and submit data to the state trauma registry. The following data must be submitted electronically to the NH Division of Fire Standards and Training and EMS as follows:

- Level I and Level II adult and pediatric trauma hospitals must submit the data noted below on a quarterly basis, beginning January 1, 2011
- Level III and Level IV adult and pediatric trauma hospitals must submit the data noted below on a quarterly basis, beginning date to be determined.

Each of the trauma facilities shall collect - at a minimum - the following data elements:

1. Patient Demographics:
 - name, address, sex, age, financial classification, race(optional)
 - patient identifier number
2. Injury Specific
 - date, time, location (city, zip, etc.) of injury
 - cause(s) of injury
 - site and circumstance of injury (industrial, recreational, vehicular, etc.) if motor vehicle incident, position in vehicle, use of safety equipment
 - traffic accident number
3. Referring hospital data (if appropriate)
 - identity of referring hospital
 - arrival and discharge dates and times
 - results of patient assessment and injury scoring at referring hospital
 - GCS, RTS, surgical procedure
4. Pre-hospital
 - EMS run number, condition of patient at scene
 - dispatch, scene and transport times,
 - triage criteria
 - etiology of injury
 - results of patient assessment, injury scoring
 - CPR and airway management (if appropriate)
5. Emergency Department General Information
 - mode of transport or arrival
 - time of trauma alert
 - date, time and time in ER
 - chief complaint and arrival condition
 - trauma team, surgeon, neurosurgeon response times
 - results of patient assessment and patient scoring (GCS, RTS, etc.)
6. Emergency Department Treatment
 - evaluation procedures: CT scans, peritoneal lavage, arteriogram, drug screens and blood alcohol level determinations, etc.
 - times to treatment

- treatments: airway management, CPR, blood given
 - ED disposition and admitting services
7. Hospital Diagnosis and Procedures
 - complete ICD-9-CM diagnosis codes

 - complete ICD-9-CM procedural codes with date and time of operations
 - ICU patient days
 8. If patient transferred to a higher level trauma facility
 - Reason for transfer
 - Date and time of transfer
 - Receiving facility
 9. Performance improvement Indicators
 - as recommended by ACEP, ACS, other
 10. Complications
 - related to treatment, injury
 - resulting from patient medical history
 11. Total charges, collections
 12. Outcome
 - organ/tissue donor

Effective date: _____

Supercedes: _____

APPENDIX C

REQUIRED PEDIATRIC EQUIPMENT

PEDIATRIC EQUIPMENT	LEVELS			
	I	II	III	IV
Organized pediatric emergency cart with sizes for all pediatric patients	E	E	E	E
Pediatric resuscitation drugs	E	E	E	E
Printed drug doses/length-based resuscitation tape	E	E	E	E
Pediatric ventilator	E	E	D	D
Heating source (for infant warming)	E	E	E	E
Specialized pediatric trays that are age specific – size specific	E	E	E	E
Fracture management devices and equipment suitable for pediatric immobilization	E	E	E	E
Intraosseus infusion equipment with appropriate size gauges for children	E	E	E	E

Effective date: _____

Supersedes: _____