Executive Summary

ACS COT Trauma System Consultation

State of Connecticut

Hartford, Connecticut

February 26 - March 1st, 2006

Methodology

The Office of Emergency Medical Services within the Department of Public Health of the state of Connecticut requested this Trauma Systems Consultation, which was conducted under the auspices of the American College of Surgeons, Trauma System Consultation program (TSC). The multidisciplinary site visit team (SVT) consisted of: two trauma surgeons, one pediatric/trauma surgeon, one emergency physician, two trauma/emergency nurses, one State Emergency Medical Services (EMS) director and a rural trauma/prehospital specialist. Support staff were also involved in the team; biographical sketches of the SVT members are included as *Appendix A* of the report.

Prior to the visit, the SVT reviewed the ACS pre-review questionnaire (PRQ) completed by members of the Office of Emergency Medical Services in conjunction with the Connecticut State Committee on Trauma. The SVT also reviewed a number of related supporting documents provided on-site at the time of the consultation visit.

The SVT convened in Hartford, Connecticut on February 26, 2006 to review the state of Connecticut's trauma system. After an overview of the successes and challenges facing the trauma system, a series of interactive sessions between SVT and a broad range of trauma system participants were held during the following two days. There was the opportunity for informal discussion with the participants and time devoted to questions and answers. Requests were made for input in writing from participants and several documents were received by the SVT during the course of the visit.

On March 1st a final open plenary session was held with systems stakeholders at which a summary statement of all principal findings by the SVT was presented. At this session, the elements and structure of an inclusive trauma care system were outlined as well as the magnitude of the injury problem and costs in the state of Connecticut. The major strengths, challenges, opportunities, and key recommendations made by the SVT were presented.

During the site visit, the SVT deliberated in sequestered sessions for the purpose of developing team consensus on the various issues and recommendations involved in the consultation. During the last two days of the visit, SVT wrote and revised a report of their findings and recommendations regarding the trauma system in the state of Connecticut. This report was based upon the information contained in the PRQ, information obtained during the interactive dialogue, information obtained during the course of informal interviews at the time of the site visit, and information requested and obtained at the time of the site visit by the reviewers. The factual information contained in this report has been reviewed and corrected to the extent possible. Occasional minor inconsistencies related to the communication and transcription of information passed on to the surveyors during the interactive sessions will not affect the assessment and key recommendations made in the report.

The process by which this report was developed was independent of any other trauma system consultations or assessments. The state of Connecticut Office of Emergency Medical Services staff were given the opportunity to review this report for factual content, and the report has been subsequently reviewed, revised and edited by members of the SVT and the ACS Trauma Systems Planning and Evaluation committee.

OVERVIEW

The primary objective of this ACS, Trauma Systems Consultation is to help the State of Connecticut promote a sustainable, inclusive trauma system for its citizens. Connecticut is the "Constitution state" and has a land area of 4845 mi.^{2} defining it as a small state, 48th in size within the United States. Although it has eight counties, the political power resides at the local level, distributed among 169 jurisdictions and two tribal nations. It is a state steeped in tradition: admission to statehood was on January 9, 1788. An essential member of the New England family of states, Connecticut is boarded on the east by Rhode Island, to the north by Massachusetts, to the south by the Long Island Sound and to the west by New York. The population is approximately 3.4 million, 29th within the Union, and the topography ranges from the sea coast of Long Island Sound to the gentle mountains of Mt. Frissell at 2380 feet. 85% of the population lives within 15 minutes of the main interstates that cross the state. The state is the richest state in the nation per capita; world-renowned industries include insurance and finance, high-tech manufacturing and world-renowned healthcare facilities and research universities.

Traumatic injury is a major concern of the state. Costs of injury in the state were over $480,000,000 in 1996, and there were over 900 deaths and over 200,000 visits to emergency departments and hospital admissions in that same year. The appointment of an emergency physician as the current Commissioner for Public Health, coupled with the recognition that there is a need to update the current regulations and trauma statutes provided the impetus for the ACS Trauma Systems Consultation. The data presented to the SVT the seriousness and cost

of traumatic injury within the state of Connecticut and clearly documents injury as a major public health problem. All participants in the Trauma System Consultation process recognized that a concerted effort to integrate the elements of the existing trauma system could be beneficial to the residents and visitors to the state.

CURRENT STATUS

Past efforts and system development included a National Highway Traffic Safety Administration (NHTSA) EMS, systems review in 1991, followed by a re-review in 2000. All system components were identified to be either in place, or under development. The lead agency is clearly defined in statute as the Office of Emergency Medical Services (OEMS) within the Department of Public Health. OEMS has the appropriate authority to oversee the system through regulations that define many of the system characteristics. To date, there are verified Level I and II trauma centers but there are no Level III or IV trauma centers even though the regulations state that all hospitals have to be one of the four levels. There is recognition that the regulations need to be updated. Such revisions are expected to be submitted by July, 2006. There is a well-established prehospital system, with four levels of EMS providers. The system is served by 31 acute care hospitals and one VA facility and the trauma system is designed to be inclusive. By regulation, all hospitals have to be at Levels I, II, III or IV as described by the American College of Surgeons in the *Resources of Optimal Care of the Injured Patient: 1999*. However, this regulation is not enforced. At the time of the site visit there were two facilities that were verified at Level I, and there were 10 verified level II facilities within the state. Although mention was made that many of Connecticut's acute care facilities appear to function as Level III and Level IV facilities, there did not appear to be ACS verification of these facilities. Mention was made of the high cost of the ACS verification process as the obstacle to the participation of Level III and Level IV. The process within the state is for hospitals to be verified initially by the ACS and then apply to the state for official designation. The state has developed a contract with a private vendor for the management of the statewide trauma registry. The same vendor is also supplying data management of the prehospital run sheet, thus facilitating connectivity. Two attempts to initialize the statewide trauma registry had been made at that the time of the site visit. The reviewers were informed that obstacles to implementation of the trauma registry data system had been overcome; and that data would be collected in Spring and Summer of 2006. Data reports would be forthcoming at the state level in the Fall of this same year. Testimony was provided that such data were needed to enhance the injury prevention efforts within the state and for appropriate system management.

Resources & Advantages/Assets

- Excellent relationships between EMS constituents and the DPH
- Recognition by all providers that they need to move their existing system to the next level of integration
- System is intended to be inclusive, with all hospitals involved

- Well-defined EMS provider structure - all staff are committed to patient care
- Statewide E-911
- The Statewide EMT-P coverage - by a tiered response, paramedic intercept or paramedic on request
- Two Level I facilities are strategically located within the state
- A well-established helicopter program with over 20 years experience
- Two renowned University-based systems with the extensive research capabilities
- National leaders in trauma care within the state
- Stability and dedication of trauma program coordinators
- Electronic prehospital data collection and trauma registry in nearing full implementation
- Well coordinated domestic preparedness resources
- Current commissioner of Public Health shares the vision and promise of an integrated and inclusive system

Challenges

The following were among the challenges to the implementation of a statewide inclusive trauma system:

- Staff at all levels are over-extended
- Perception that increased funding will overcome remaining system development obstacles
- A sense that the hospitals are bearing the financial burden of system development and improvement
- Bed capacity (especially ICU beds) are at critical levels
- Physician recruitment/ retention in community hospitals a concern – particularly of specialists such as neurosurgery and orthopedics
- Nursing recruitment and retention issues: especially in the emergency departments and in the ICU's
- The legislature and public not aware of the status of a system development within their community or the state

Opportunities

The timeline of July 2006 for the revision of trauma regulations provides the opportunity for system evaluation review and further development. The opportunity for implementation of the statewide trauma registry together with the subsequent linkage with EMS data, has enormous potential for dramatic improvements in injury prevention, health care costs savings and epidemiological research. With integrated implementation of all system elements, Connecticut stands at the threshold of being the model trauma care system within the nation.

Key Recommendations

The following are the key recommendations from each component of the trauma system. This is a summary only, and does not include all the recommendations or explanatory language which may be found in the body of the report.

- The CT State Trauma Committee should update the existing Statewide Trauma System regulations.
- The Department of Public Health, with input from the State Trauma Committee should update the Statewide Trauma System Plan. It should follow the structure of the *HRSA Model Trauma System Planning and Evaluation*.
- The Connecticut Department of Public Health Office of Emergency Medical Services (CT DPH OEMS), with input from the range of stakeholder groups, should identify what the trauma system costs are, and establish mechanisms for tracking them.
- The Connecticut Department of Public Health (CT DPH) should establish a job description for the position of the physician medical director for the EMS and trauma system.
- The CT DPH should expand the commitment to staffing its trauma system coordinator position as a full-time equivalent.
- The Connecticut EMS Medical Advisory Committee (CEMSMAC) should develop measurable trauma system performance standards.
- Improve coordination of injury prevention programs and activities statewide.
- Conduct a trauma workforce assessment to establish the current status of the trauma workforce and identify gaps.
- Utilize information from the assessment to guide the development of strategies that will address gaps and ensure an adequate trauma workforce across Connecticut.
- The State Trauma Committee should develop and recommend standards for trauma education to the Department of Public Health. Standards should include types, levels and frequency of trauma training for:
    - All prehospital provider levels
    - Designated trauma center nurses, physicians and allied health care professionals
    - Non-verified hospital nurses, physicians and allied health care professionals
- Update the EMS and trauma systems regulations to reflect the dynamic nature of current practice of out-of-hospital trauma care and the proposed improvements to the systems.
- Develop statewide EMS trauma care protocols.
- Provide specific support and guidance to the regional EMS structure to allow for expanded coordination and consolidation of trauma system activities.

- Work with local jurisdictions & the OEMS Volunteer Committee to provide guidance on level of service needs and response times standards for local areas of the state.
- Strongly consider consolidating and standardizing PSAP and dispatch activities throughout the state.
- Consider consolidating Coordinate Medical Emergency Direction (CMED) functions based on the regional EMS structure.
- Establish regular, real-time, web-based reporting of hospital status based on the current web-based hospital survey mechanism.
- All hospitals should be designated as trauma centers or trauma-receiving facilities as part of an inclusive trauma care system.
- Trauma data should be submitted from all hospitals to the statewide trauma registry in the most cost-effective manner possible.
- A detailed report should be developed to determine the adequacy of interfacility transfer of trauma patients and should be collected by DPH.
- Rehabilitation data (including serial scores) should be submitted to the State Trauma Registry from each rehabilitation facility as well as from all acute care hospitals and trauma centers.
- Improve coordination of pediatric trauma care between pediatric trauma centers and non-pediatric facilities. Pediatric trauma centers should provide detailed feedback to prehospital and hospital providers of pediatric trauma center in an effort to define appropriate pediatric trauma care standards, transfer agreements and potentially guidelines for transferring pediatric trauma patients back to the community facility after have completed the critical component of the hospital stay at the Level I pediatric facilities.
- Develop pediatric specific Interfacility transfer guidelines and a mechanism to review outcome of pediatric patients who are transferred.
- The State Department of Public Health – Office of EMS should continue, with all due diligence, its efforts to establish a system trauma registry.
- The State Department of Public Health – Office of EMS should continue, with all due diligence, its efforts to establish a NEMSIS compliant statewide prehospital patient care record system.
- As the trauma registry program is implemented statewide reports should be in place that monitor trauma patient resource needs, resource utilization and costs.
- Review and update, as appropriate, existing regulations to ensure confidentiality and oversight including protection from discovery, of all data generated by the trauma system at every level (both the hospital and prehospital components).
- Data reports should be provided to members of State Legislature and the public media with an effort to stress the importance of trauma as a preventable disease and the cost effectiveness of trauma prevention programs.

Administrative Components

Leadership

Purpose

There should be a trauma system lead agency with an identified key person. The lead agency will usually be a government agency with the authority, responsibility, and resources to lead the development, operations, and evaluation of the trauma system. The statutes, regulations, policies, or guidelines should direct that the lead agency will:

- *Ensure the integration of the EMS system, including all prehospital components*
- *Coordinate system design*
- *Establish minimum standards for system performance and patient care*
- *Create a Trauma System Advisory Committee that is composed of prehospital personnel, hospital personnel, rehabilitation personnel, payors, consumers, and public interest groups. This committee should serve to guide system planning activities, define system criteria (number of centers, volume), recommend system standards (triage, timelines), and review system performance*
- *Have sufficient staffing, including a trauma system coordinator experienced in trauma system development and implementation*
- *Identify the key person in the lead agency*

The trauma system should have a strong role for a trauma physician(s) as an integral part of its leadership component. This physician, Trauma Medical Director, should be qualified to participate in the planning of the trauma system, work with the lead agency, be incorporated into the system, and be responsible for design and implementation of the trauma system, medical accountability, and ensuring an appropriate medical response to the trauma patient.

CURRENT STATUS

The assignment of leadership in the Connecticut trauma system is reasonably clear. Connecticut's lead agency for trauma system development and management is the Office of Emergency Medical Services within the Operations

Branch of the Connecticut Department of Public Health. OEMS has responsibilities for development, implementation, evaluation and enforcement of trauma system standards. Leonard Guercia is the Operations Branch Chief, and Gary Wiemokly serves as the Office of EMS Section Chief. The Operations Branch reports directly to Commissioner of Health, J. Robert Galvin, MD. Lynn Piacentini is the State's Trauma Coordinator. Ms. Piacentini also serves as the EMSC Program Manager. Dr. Michael Zanker is the State EMS Medical Director. There is no specific job description for Dr. Zanker's position although information was provided indicating that he also has duties that would routinely be assigned to a medical director of the trauma system.

On the stakeholder side, CT has an active EMS Advisory Board with seventeen established committees, including one for trauma. The State Trauma Committee is chaired by Lenworth Jacobs, MD, MPH, FACS and has a current membership of thirteen as described in the state trauma regulations. Notably absent from the membership of the State Trauma Committee is representation from third party payors and consumers. These gaps are important to fill given the emphasis that many presenters gave related to the needs of system financing. The State Trauma Committee is charged in regulation with advising the Commissioner of Health through the EMS Advisory Board about protocols, the status of the trauma system, and any recommendations for changes.

It is apparent that CT receives excellent service from many committed leaders in the trauma system. These advisors serve uncompensated representing their areas of interest and expertise. It is unlikely that the state could ever fund the actual cost of these services. These in-kind contributions of leadership bring depth and specialized knowledge to the system development efforts underway and should be supported by professional staff within the Department of Public Health. Given the number of groups and individuals participating in the trauma system effort, it is disconcerting that the state's trauma coordinator is only a part-time position.

A number of presenters during the Trauma System Consultation process spoke highly of their confidence in the current Commissioner and DPH OEMS leadership. A challenge was acknowledged about the need to establish durable systems and routines that can be sustained beyond the tenure of current leaders.

RECOMMENDATIONS

- **The CT DPH should establish a job description for the position of the physician medical director for the EMS and trauma system.**
  - This physician needs the ability to assure that the trauma regulations are enforced and should function as a system resource on matters of clinical care.
  - The physician in this position must be a visible and credible link to both the emergency medicine and surgical communities.

- The medical director should be a full-time position within the CT DPH OEMS.

- **The CT DPH should expand the commitment to staffing its trauma system coordinator position as a full-time equivalent.**

- The State Trauma Committee should be expanded to include representation from third party payors and consumers.

System Development

Purpose

The trauma system lead agency should have a defined planning process for trauma system development that addresses:

- *Identifying trauma care resources, including resource deficits within the defined area of the trauma system*
- *Developing and implementing trauma care plans and systematically reviewing plans over time*
- *Including health professionals, consumer groups, and payors in trauma system planning*
- *Approving the trauma system plan*
- *Establishing, reviewing, and revising trauma system standards of care, including policies, procedures, and protocols for both the prehospital and hospital personnel*
- *Analyzing the financial impact of developing and implementing the trauma system.*

The trauma system should be integrated with the EMS system and should include a mechanism to interface with and incorporate other EMS plans, such as disaster and mass casualty. It should also have a mechanism to integrate managed care entities in the area.

CURRENT STATUS

In 1991, a NHTSA State EMS assessment was conducted. The assessment report made several key recommendations regarding the improvement of trauma care in the state, including:

- Develop a statewide system of trauma care
- Establish a trauma patient transportation & triage plan
- Designate trauma centers at all levels
- Collect cost and reimbursement data at all levels of care

A NHTSA State EMS reassessment in 2000 identified similar needs.

In 1992, a State Trauma Committee, chaired by Lenworth Jacobs, MD, MPH, FACS, was charged with the development of statewide trauma system regulations. The work of this group resulted in a set of draft regulations being approved in June 1993, by the CT EMS Advisory Board "with comments." The draft was then forwarded to the Commissioner of Health to begin the formal adoption process. After a series of public hearings and other administrative process, the trauma rules were adopted in March 1995 and became operational later that same year. The regulations include significant detail about facility designation and verification, field triage protocols, interhospital transfers, data collection, etc. Several presenters referenced work in progress to update the trauma regulations. Central to this update is a shift to incorporating system standards by reference to other professional guidelines rather than spelling out standards in regulation that may change over time based on research or clinical practices.

A Statewide Trauma System Plan was written in 1995. This document is descriptive of the vision for a statewide trauma system in Connecticut but lacks strategies on how this vision could be achieved. The plan has limited use as a yardstick for measurement of progress in building the trauma system. The Trauma System Plan also does not provide a resource inventory of known system assets. Most presenters had an excellent grasp of the resources in the system, but there was not a single inventory contained in the plan.

There are statewide triage criteria described in the trauma system regulations but no statewide clinical trauma prehospital protocols. Protocol design has been left to the EMS regions and local hospitals. The local variations cause confusion and difficulties for EMS providers moving between regions and working with different hospitals.

The vision for the state's trauma system is an inclusive model where all hospitals and EMS providers are participants. This approach is consistent with contemporary design and the national model supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration. To date, the state has taken an approach where hospitals seek ACS verification at whatever trauma center level capability they are able to meet. The DPH designates the hospital as a trauma center at a level consistent with that verification. The state's designation has been done with no specific assessment of system needs. Accordingly, the state could have too many trauma centers of the wrong level, too few trauma centers, or an appropriate number of trauma centers in the wrong locations. To date, Connecticut has not been successful in enforcing a system standard of verifying hospitals functioning as Level III/IV facilities. The result is that not all hospitals are fully integrated into the trauma system.

Development efforts of the system to date have been funded through a combination of federal grants, hospital support, and a portion of the 9-1-1

surcharge. There is not a stable ongoing source of funding that has been allocated to maintain or further the system development process.

RECOMMENDATIONS

? The Department of Public Health, with input from the State Trauma Committee, should update the Statewide Trauma System Plan. Follow the structure of the *HRSA Model Trauma System Planning and Evaluation*.
    - Focus on strategies for moving from the current status to a vision of excellence for Connecticut's system. Describe specific measurable objectives such as; *by December 31, 20XX all licensed hospitals in CT will be submitting data to the Statewide Trauma Registry on a quarterly basis.*

? The CEMSMAC should develop statewide trauma care protocols for the management of injured adults and children.
    - These should be available statewide, across all EMS regions, and apply consistently for all hospitals and EMS providers.

? **The CEMSMAC should develop measurable trauma system performance standards.**
    - An example of the desirable level of specificity would be; *Children with an ISS of 16 or > will arrive at a Level I pediatric trauma center within 4 hours of discovery.*

? The Connecticut EMS Advisory Board should facilitate ongoing efforts to bring all trauma stakeholders together to develop an enforceable and fully functioning system.
    - There appears to be good consensus among the various interest groups about what to do, but less unanimity about how to do it.

Legislation

Purpose

- *Comprehensive legislation is essential for trauma system development. The creation of statutes and regulations to develop the trauma system sets in place the necessary legal authority to move forward without concerns about anti-trust issues. Comprehensive statutes and regulations can provide for the process of planning, implementing, and funding the trauma system. Key provisions in trauma legislation include the ability to work through constituency groups to:*

- *Develop a comprehensive trauma system plan*

- *Integrate the trauma program with the existing EMS system*

- *Incorporate prevention programs and activities*

- *Establish or adopt guidelines for the prehospital, acute hospital, and the rehabilitation phases of trauma care*

- *Collect data and evaluate system performance*

- *Provide for confidentiality of trauma records, reports, and quality of care reviews*

- *Establish authority to designate trauma centers*

- *Provide authority for the inter/intrastate and international planning and implementation of trauma systems, without regard to jurisdictional boundaries.*

Additionally, trauma legislation should include a dedicated funding mechanism and an administrative structure for trauma management and should ensure fiscal support for all components of the system, including the legal authority to ensure that third-party payment is coordinated within the trauma system.

CURRENT STATUS

The Connecticut Department of Public Health has broad authority in statute for the development of an EMS and trauma care system. The essential feature of the legislation is the authority to develop regulations that govern the trauma system.

Trauma regulations were adopted in 1995. The regulations contain significant detail about facility designation and verification, field triage protocols, interhospital transfers, data collection, etc. Several presenters referenced work in progress to update the trauma regulations. An important strategy in performing this update is a shift to incorporating system standards by reference to other professional guidelines rather than spelling out standards in legislation or regulation that may change over time based on research or clinical practices. It is apparent from testimony that enforcement of certain regulations is lacking.

A Statewide Trauma System Plan was written in 1995. At this time of the site visit modifications to the existing trauma regulations are planned with submissions to the Department of Health proposed by July 2006. The ACS site visit and the subsequent report were proposed to serve as an independent advisory group to identify areas of improvement that could serve as a guide for such proposed revisions.

CT has not yet implemented an EMS information system that includes a statewide trauma registry, although efforts are underway to establish this capacity. It was apparent to many presenters that options being presented to the trauma stakeholders need objective data to guide the consensus process.

Information was provided indicating that portions of the CT EMS regulations have not been updated in many years. It was reported that there are some conflicts between the existing EMS regulations and the trauma system regulations. Resolving these conflicts represents an opportunity to improve the integration of trauma and EMS.

RECOMMENDATIONS

? **The CT State Trauma Committee should update the existing Statewide Trauma System regulations.**
  - Consider how to incorporate relevant professional guidelines by reference rather than providing detailed descriptions of standards in legislation or regulation that will change over time.
  - Consider provisions for how to make the system's regulations enforceable.

? **The Department of Public Health with input from the State Trauma Committee, should update the Statewide Trauma System Plan.**

Follow the structure of the *HRSA Model Trauma System Planning and Evaluation*.

- Focus on strategies for moving from the current status to a vision of excellence for Connecticut's system. Describe specific measurable objectives such as; *by December 31, 20XX all licensed hospitals in CT will be submitting data to the Statewide Trauma Registry on a quarterly basis.*

? Protection for QA/QI occurring outside of the hospital setting must be assured.
    - The CT DPH OEMS should determine if this protection can be provided in regulation or if statutory change will be required.

? As the trauma system regulations are updated, resolve the conflicts that exist with the EMS regulations. Both sets of regulations should be complimentary to each other and further the EMS and Trauma System Agenda for the future.

? Take steps to fully implement an EMS and trauma system information system that is useful to all stakeholders for purposes including monitoring of financial performance, PI, injury prevention, system planning, protocol development, etc.

Finances

Purpose

Evaluating the health of a trauma system's finances is still in its early development stages. This section outlines generally accepted business financial principles that are used as baseline.

At all levels of evolution, the trauma system should demonstrate through its trauma system lead agency financial accountability. This accountability should first include lead agency reporting of financial stability. Second, the lead agency should show the development of routine financial reporting by component, which reflects the financial health of the system. Trauma system components include system management, prehospital, trauma facilities, acute care, rehabilitation, and prevention programs. The lead agency should have established the following processes:

Lead Agency Financial Accountability

- *A standardized model accounting report that lists costs and is used consistently with standardized definitions throughout the system*
- *A process to develop, review, approve, and monitor expenditures and revenues by line item*
- *A process to develop, review, approve, and monitor each component's costs over time*
- *A process that allows the trauma system financial costs to reflect its relationship to the trauma plan outcome measures*
- *A process for maintaining at least two years of audited financial records that meet accepted financial accounting principles*
- *A process to audit the financial health of the trauma system over time*

Component Financial Accountability

- *A process that defines how trauma centers integrate alternative delivery systems (payor systems) into the trauma program*
- *A process that defines how rehabilitation centers integrate alternative delivery systems (payor systems) into the trauma program*

- *A process that defines the incremental component costs associated with trauma system participation*

Overall, the lead agency financial component should be integrated with other existing plans of the emergency medical service system to include, but not be limited to, disaster, prehospital, trauma facilities, acute care, rehabilitation, and prevention programs.

CURRENT STATUS

Financing for the development, and operation, of Connecticut's trauma system is insufficient. The trauma regulations require all hospitals in the state to be designated at one of four levels based on the American College of Surgeons trauma center verification process. Currently there are no verified Level III or IV hospitals. Some presenters suggested that verification costs are a barrier to all hospitals becoming active participants in the system.

All hospitals are required by regulation to provide trauma data to a state trauma registry. Currently the data are not being transferred to the state. This represents a system requirement that is not being enforced. There is no source of system funding to support the cost of hospital trauma registry personnel to perform data entry. There are various ACS verification criteria that address trauma case management, injury prevention, provider education and other elements associated with the provision of quality care for which hospitals incur costs.

At the state level, the funding for trauma system infrastructure costs has been covered by various federal grants. Information provided throughout the consultation process described a void of any state general funding commitment for trauma system costs. A portion of the costs for EMS and trauma software is funded from a 9-1-1 surcharge.

Much of the clinical cost of trauma care delivery is covered by third party payors. It was reported that the CT trauma system provides significant amount of uncompensated care, although the actual amount has not been calculated. The example was shared of a foreign patient with no insurance who suffered a spinal injury requiring five months of care before the patient could be repatriated to his home country at considerable cost to the trauma center.

No formal analysis or credible estimate of the costs associated with development or operation of a statewide trauma system has been made. Similarly, there has been no detailed examination of the statewide financing of clinical care including compensated and uncompensated care. Some hospitals reported that they were adequately reimbursed for the direct costs of trauma care although it was not known if that reimbursement covered the institution's system infrastructure costs such as verification, data entry, injury prevention efforts, etc. In discussions about options for improving trauma system funding, several participants reported

that neither the Governor or the Legislature are generally in favor of dedicated funding mechanisms. It also was reported that 9-1-1 surcharge funding in support of trauma and EMS information is not a well supported mechanism. Block grant funding currently in use for this same purpose is being phased out.

RECOMMENDATIONS

? **CT DPH OEMS with input from the range of stakeholder groups should identify what the trauma system costs are and establish mechanisms for tracking them.**
    - It is essential to know what the total system costs are before attempting to establish mechanisms to support them. This includes costs associated with system management and oversight as well as hospital trauma center costs.

? CT DPH OEMS, with input from the range of stakeholders, should establish which trauma system development and operating costs should be assigned to whom.
    - For example, the current trauma regulations require hospitals to be verified by the ACS as trauma centers. The cost of this assessment is assigned, de facto, to the hospital being verified. Is that appropriate? Consider an arrangement whereby Level I, II, and III's are verified by the ACS and Level IV's are done with instate reviewers as other states do.

? CT DPH OEMS, with input from the range of stakeholders, should look at how other states are financing system costs.
    - Consider solutions that assign the system costs to the patients who benefit from the system response (e.g. activation fees).
    - Implementation of any funding solution will require:
        - An understanding and agreement about what the costs are.
        - Consensus about who should be responsible for which costs.
        - Funding mechanisms that all stakeholders can regard as fair and reasonable.

Operational and Clinical Components

Injury Prevention and Control

Purpose

A comprehensive injury control system includes prevention and rehabilitation in addition to acute care. The ultimate goal of an organized trauma care system is to prevent injuries, just as the ultimate goal of medicine is to prevent disease. Consequently, the trauma care system should participate in the establishment of a system-wide injury control coalition (SICC). One form is an IPC or injury prevention center. Composed of members from public and private sectors interested in prevention activities, this coalition will create prevention partnerships to reduce fragmentation and intensify community interventions.

- *Jointly with the SICC, a plan to promote injury control should be developed and implemented that will:*

  a) *Heighten awareness of injury as a public health problem*

  b) *Educate elected officials and the public about the need for trauma care systems and injury control to promote the passage and implementation of legislation aimed at reducing injury*

  c) *Educate the public about current trauma system development*

  d) *Educate the public about how to safely approach an injury scene, access the trauma care system, and provide assistance to the injured person until professional help arrives*

  e) *Involve public/voluntary organizations to aid system financing*

  f) *Conduct injury surveillance*

  g) *Develop a system-wide consensus approach to injury control interventions using needs assessment and intervention evaluation*

  h) *Communicate key trauma prevention strategies.*

- *The trauma care system should do a needs assessment to identify priority injury problems (including identification of high-risk groups and environmental factors)*

- *With the support of the trauma care system, the SICC should develop and implement priority injury control interventions that follow the injury control plan*

- *The SICC should carry out a public information program that follows the injury control plan*

- *The SICC should evaluate the success of injury control interventions. Outcome evaluations using trauma system data are preferable*

- *The SICC should integrate the potential of an organized entity to promote prevention activities within the system*.

CURRENT STATUS

The Division of Injury Control and Prevention, within the Department of Public Health, is comprised of only two full-time employees, only one of whom is supported by state general funds. The other is supported by federal Preventive Health and Health Services block grant funds and is expected to be reassigned when these funds are no longer available on September 30, 2006. The Division is the recipient of a grant from the federal Centers of Disease Control and Prevention for $600,000 over the next five years, but this will barely cover grant management and the salary and fringe benefits of an epidemiologist for the Division. The Division is also the holder of a small federal Traumatic Brain Injury grant, but the prevention activities that are supported by this grant are limited.

The state of Connecticut requires all state designated Level I and II Trauma centers to be verified by the American College of Surgeons Committee on Trauma according to standards described in the most current edition of its *Resources for Optimal Care of the Injured Patient*, which mandates that all verified Level I and II Trauma centers must establish and maintain injury prevention programs in and for the communities that they serve. As a result, all Level I and II Trauma centers in the state of Connecticut have developed and support injury prevention activities in their catchment areas. There is recognition 80that statewide injury prevention activities could be better coordinated, but the Division of Injury Prevention and Control has neither the authority, nor the funds, for oversight of trauma center-based injury prevention activities. Moreover, the Injury Prevention Subcommittee of the State Trauma Committee has, reportedly, not met in several years, due to a lack of any meaningful data or information with which to work. The Trauma Program Managers from the state's Level I and II Trauma centers do meet periodically to share injury prevention ideas and instruments, but they have no source of funding to support these activities.

Informal collaborative relationships exist among the Division of Injury Prevention and Control and the Office of Emergency Medical Services. A more formal relationship is needed to help decide which injury prevention activities are likely to be most beneficial. The State Trauma Registry could then be used to determine the success of these activities and develop best practice guidelines which could then be disseminated statewide.

Although there is a clear perception among the state's trauma professionals that public education is vitally important both to injury prevention and trauma systems, there appears to be little public support either for public health-based or trauma center-based injury prevention programs. The general public appears to believe not only that it has a trauma system but that it is working reasonably well. While capable of generating long-term savings, injury prevention requires short-term investment that hospitals, and the communities they serve, may no longer be able to afford. Other common sources of community funding for injury prevention programs are unfortunately absent. Neither the Connecticut State Committee on Trauma of the American College of Surgeons Committee on Trauma, nor the Connecticut Division of the American Trauma Society, has sufficient funds to support hospital-based injury prevention programs.

Some highly successful injury prevention programs have already been established in the state of Connecticut. The Connecticut Children's Medical Center Pediatric Injury Prevention Program, part of the national Injury Free Coalition for Kids, has demonstrated expertise in the area of community and outcomes-based injury prevention. This program has been highly successful in garnering community support for its injury prevention initiatives, has published its findings in public media as well as in the scientific literature, and has demonstrated the power of community-based coalitions in reducing the burden of injury in the community that it serves. In the absence of public funding, this model should be adopted by the trauma system, and used to generate outcome data that shows the value of injury prevention, not only in reducing the burden of injury, but also in saving scarce health care dollars.

Other ad hoc injury prevention programs have also been successful in recent years. Seat belt, infant seat, booster seat, and motorcycle helmet legislation have all been passed. However, the latter was recently rescinded after an informal but highly visible and vocal public education campaign led by a celebrated local motorcycle rider named "Pappy". Sadly, it has been far more difficult for trauma professionals to mount colorful, media worthy, local or statewide public education campaigns in support of injury prevention activities. The impact on mortality and morbidity has yet to be documented from the repeal of the motorcycle helmet legislation.

RECOMMENDATIONS

? **Improve coordination of injury prevention programs and activities statewide.**
  - Immediately reconstitute the Injury Prevention Subcommittee of the State Trauma Advisory Committee to meet quarterly and provide staff support. Ensure representation from the Division of Injury Prevention and Control and the State Emergency Medical Services for Children Program.
  - Charge the Injury Prevention Subcommittee with development of a statewide injury prevention plan to stress key injury prevention initiatives.
  - Charge the Division of Injury Prevention and Control with revision of the Injury Prevention Resources document to reflect current activities.

? Adopt specific injury prevention strategies shown to be effective elsewhere.
  - Strongly encourage trauma centers to adopt brief alcohol screening and intervention programs for all emergent or admitted trauma patients.
  - Request the Connecticut Children's Medical Center Injury Free Coalition for Kids to offer on site injury prevention training for visiting coordinators.

? Measure the success of injury prevention programs and activities statewide.
  - Utilize the State Trauma Registry, once fully functional, to determine which injury prevention initiatives are most successful, develop best practice guidelines based upon these initiatives, then replicate them statewide.
  - Document healthcare cost savings that result from successful injury prevention initiatives, then seek additional funding to support trauma center based injury prevention coordinators in each center.
  - Publish and report findings on morbidity and mortality as a result of the repeal of the motorcycle helmet law.

? Engage print and broadcast media to produce advertisements and spots.
  - Highlight the importance of injury prevention to personal and family health.
  - Highlight the successes and needs of the statewide trauma system.
  - Highlight the importance of the trauma system to disaster preparedness.

Human Resources

Workforce Resources

Purpose

The trauma system should have a distinct process for evaluating the adequacy of human resources available (within and outside the hospitals) to support normal system activity. The process should:

- *Match resources with patient needs*
- *Define the optimal number and type of prehospital personnel and resources to be available to care for trauma patients*
- *Define the optimal number and type of hospital personnel and resources to be available to care for patients in all areas of the hospital*
- *Address periodic reevaluation of resources through an initial needs assessment and identification of trauma care work force resources and matching resources to patient care*
- *Determine a plan for dynamic flexible response for optimal management of patients during peak periods of activity that stress the system (both prehospital and hospital resources should be included in the plan)*
- *Address recruitment and retention of qualified personnel*
- *Identify current numbers of certified prehospital personnel and their level of certification*
- *Identify current hospital personnel resources, including physicians and their specialties, nurses, and other health care personnel*
- *Evaluate resources and personnel in trauma specialty care units for /*
- *Identify the number and severity of injured patients cared for by hospitals and individual surgeons*
- *Assess the impact of system operations on existing levels of professional resources within the community, including limited physician specialists, such as neurosurgeons, orthopedic surgeons, anesthesiologists, and so on*

- *Identify current numbers of certified prehospital personnel and their level of certification*

- *Identify current hospital personnel resources, including physicians and their specialties, nurses, and other health care personnel*

- *Address periodic reevaluation of resources through an initial needs assessment and identification of trauma care work force resources and matching resources to patient care*

- *Evaluate resources and personnel in trauma specialty care units for /*

- *Identify the number and severity of injured patients cared for by hospitals and individual surgeons*

- *Define the optimal number and type of prehospital personnel and resources to be available to care for trauma patients*

- *Assess the impact of system operations on existing levels of professional resources within the community, including limited physician specialists, such as neurosurgeons, orthopedic surgeons, anesthesiologists, and so on*

- *Assess the impact of system operations on existing levels of professional resources within the community, including limited physician specialists, such as neurosurgeons, orthopedic surgeons, anesthesiologists, and so on*

- *Address recruitment and retention of qualified personnel*

- *Determine a plan for dynamic flexible response for optimal management of patients during peak periods of activity that stress the system (both prehospital and hospital resources should be included in the plan)*

- *Define the optimal number and type of hospital personnel and resources to be available to care for patients in all areas of the hospital*

CURRENT STATUS

The candid testimony provided by prehospital, trauma center, and State presenters bears witness to the concern about ensuring an adequate workforce that can meet the needs for trauma care in Connecticut. Whether the many dedicated men and women who provide trauma care on a daily basis meet, or fall short of the statewide system need, is not fully known because a formal process for evaluating the trauma workforce is not in place in Connecticut. The current lack of trauma data and data analysis is identified as a limiting factor in moving to a more formal level of human resource assessment and needs-based planning across the system. It is felt that the implementation of the planned EMS and

Trauma registries can provide a mechanism for using system data to better evaluate the trauma system, including trauma workforce needs.

A system-wide assessment process has not emerged at local, regional or state levels. The process that has been utilized is described by system participants as being “informal”, occurring at the individual agency or hospital levels of the system.

EMS Agencies

EMS agencies use state ambulance staffing levels from EMS regulation as the primary mechanism to determine the number of EMS personnel that are needed to provide both emergency medical and trauma care in their local systems. Cities and other local jurisdictions do not generally require a more detailed analysis of EMS manpower needs for EMS service funding support. EMS participants did not identify any additional decision making processes for determining appropriate EMS staffing levels for trauma care.

EMS providers deliver service through a variety of system models. The staff configuration is left to local areas (cities and groups of cities) to determine and financially support. The mix includes paid and volunteer EMS professionals. There are two hospital-based ambulance programs in the state. There are multiple private ambulance companies providing EMS service. There is a large segment of the state that relies on volunteer ambulance service. The volunteer service areas report that they frequently rely on mutual aid to provide adequate number of providers for calls. Paramedics work at multiple agencies across the state. It is noteworthy that some report working back to back jobs. The number of jobs and the time worked per week is not tracked at the system level.

Trauma centers

Several factors direct trauma center staffing and physician resources. Hospital nursing and allied health care staffing is primarily driven by visit volume and the availability of staff. ACS verification and trauma designation standards for trauma trained staff and response/availability also influence hospital staffing for trauma. Physician resources are ACS verification and hospital trauma designation driven. They are reportedly impacted by the availability of in-house or on-call trauma surgeons and trauma subspecialists. Physician resource availability is also described as being impacted by trauma education and on-call requirements.

Recruitment and Retention

Testimony was given at all levels regarding recruitment and retention of EMS providers, nurses, allied health professionals, and physicians. In the absence of a formal system-wide assessment, reported recruitment and retention issues are based on anecdotal statements and organization specific experience.

EMS issues

It is generally felt that there is a need for more paramedics in the state. Currently paramedics may respond to multiple jurisdictions, while on duty. Base salaries are extremely low and many paramedics work multiple jobs and extended hours in a work week. The overall impact of extended work hours on the system is not known. No career ladder currently is in place for paramedics.

Nursing issues

Finding an adequate number of trauma trained nurses and allied health care workers is reportedly an ongoing struggle in meeting trauma care needs. Traveling nurses are utilized to augment nurse staffing needs. The national nursing shortage and limited nursing educators in Connecticut are cited as current barriers to resolving nurse staffing issues.

Enrollment in nursing schools in Connecticut is high; however, overall educational opportunities are not adequate due to limited numbers of nursing instructors. It was reported that, while nursing programs in Connecticut are full, they will graduate fewer nurses than will be required to meet the needs of one of the Level I Trauma centers.

Physician issues

Physicians and hospital administration report that recruitment and retention of physicians who take care of trauma patients is a challenge. This was attributed to a number of issues including trauma and critical care vacancies in training programs, no incentives for physicians coming out of training to provide trauma care, high costs of living in Connecticut, the aging physician populations, uncompensated care, the impact on physician life style, and major malpractice concerns. Sub-specialists were noted to be extremely difficult to maintain or recruit especially in Neurosurgery and Orthopedic surgery.

Surge Capacity/Disaster Preparedness

Day to day, shift to shift *flexing up* of the trauma system is managed in the prehospital arena by paramedics that work in or cover multiple area and by mutual aid. This has been in place for years and reportedly works well. At the hospital level, trauma centers generally do not divert trauma patients even when busy. Staff is assembled within hospitals to handle the influx of patients. When diversion is necessary, it is short-lived and local hospitals work together to transfer patients as needed. There are some reported issues with timely transfers of patients between some facilities but it is not currently looked at from a system-wide perspective.

After the events of September 11, 2001, Connecticut formed two public health preparedness regions which virtually divide the state into Northern and Southern sectors. The creation of two, essentially mirror image, disaster preparedness regions positions the state to move resources (including people) from one sector to the other in major situations requiring resources to be flexed up. Connecticut has created an emergency credentialing process to expedite credentialing of health care providers in disaster situations.

RECOMMENDATIONS

General recommendations

- **Conduct a trauma workforce needs assessment to establish the current status of the trauma workforce and identify gaps.**

- **Utilize information from the assessment to guide the development of strategies that will address gaps and ensure an adequate trauma workforce across Connecticut.**

Specific Prehospital level recommendations

- Identify current EMS resources in licensed prehospital agencies and how agencies currently determine their core levels for "EMS trauma response"
- Identify best practices. (ex of recruitment and retention of volunteer workforce)
- Charge the Volunteer Committee of the EMS Advisory board to work with the Regional Councils to coordinate and conduct the workforce assessment.
- Include all EMS agencies.
- Establish maximum hours worked by prehospital personnel in a given period of time. Track hours worked by paramedics and other prehospital personnel to assure patient and provider safety.
- Use the information gained about system gaps and the best practices in making recommendations for updating the statewide trauma system plan.
- Develop recommendations for goals and objectives to ensure an adequate EMS workforce.
- Develop a regional process to monitor accomplishment of objectives.
- Improve training of managers in EMS agencies in personnel management.
- Identify strategies based on the needs that are identified.

Specific Hospital level recommendations

? Utilize the State Trauma Committee to coordinate and conduct an inventory of current Trauma caregiver resources in Connecticut hospitals, including
  - Trauma designated hospitals and non-designated hospitals.

- Identify numbers and distribution by specialty areas for nursing and physicians and allied health care professionals that provide trauma care as part of the hospitals organized approach to trauma care.
- Identify issues related to the availability of adequate numbers of professional “people” resources and identify key issues – (ex. availability of trauma trained nurses, physicians, and allied health professionals - retaining professionals training in CT as CT providers, incentives, life style, reimbursement for under or uninsured).
- Use the information gained to develop recommendations for goals and objectives to ensure adequate hospital workforce for trauma care.

Specific State level

- Develop and implement regional or statewide uniform prehospital care protocols.
- Use the Regional Council and State Trauma Committee recommendations in the development of the statewide system plan.
- DPH -OEMS should serve as the repository of the assessment results initially and for subsequent statewide assessments.
- DPH should assure that adequate trauma education is available for all levels of trauma care personnel.

Education

Purpose

The trauma system should have adequate education for all levels of trauma care personnel, both hospital and prehospital. The trauma plan should address:

- *Standards for the credentials, educational preparation, certifications, and continuing education requirements (including injury prevention and control) for all personnel*
- *Incorporation of injury control information in educational standards for all trauma care personnel*
- *Quality management monitoring of courses and instructors*
- *Processes for state credentialing, certification, recertification, and decertification of trauma care personnel*
- *An organized needs assessment prior to developing new or additional educational activities.*

CURRENT STATUS

Many of the elements necessary to ensure adequate education for all levels of trauma care appear to be in existence as essential parts of the trauma system in Connecticut. However, there has not been a formal statewide assessment that specifically looks at trauma education and the gaps that need to be addressed across the system continuum. Information that is available on system gaps is largely anecdotal.

Prehospital Education / Trauma Education

Hospitals in Connecticut play the key role in ongoing EMS training for prehospital providers. Each EMS provider must be sponsored by a hospital in order to practice. Hospital-based EMS coordinators are the primary resource for delivering and coordinating prehospital education and performing outreach with rural agency providers.

Trauma center EMS coordinators and Trauma Coordinators provide trauma education for EMS providers. They provide trauma courses for EMS providers in their areas. There is no state mandate for a national recognized trauma course (PHTLS /BTLS/other trauma training). Some trauma centers invite EMS

personnel to in-house trauma conferences and trauma rounds. The number of required trauma specific training hours, as a component of the recertification requirement, was not identified. Connecticut is a National Registry state for initial certification, but is not required for recertification.

Nursing Education / Trauma Education

Formal nursing education is available in the state but the number of registered nurses that are graduated is not viewed as being adequate to meet the need for nurses in the hospital environment. There are some trauma center based programs to train new and existing nurses in trauma nursing but a shortage of qualified trauma trained nurses is perceived by individual hospitals. University Hospitals are sending staff as faculty for local nursing programs to augment instructor shortages. There has not been a statewide assessment to date that has looked specifically at the trauma training issue.

Trauma nursing continuing education is multifaceted. Nurses in the trauma centers maintain required CME education and TNCC in accordance with ACS trauma training guidelines. There is no requirement for trauma education or certifications for nurses in the non-verified hospitals. Trauma education for nurses is not reported to the DPH-OEMS as a part of the trauma designation process or from non-verified hospitals so the extent and distribution of trained trauma nurses is not known at this time.

Physician Education

Connecticut has two schools of medicine that contribute to the physician pool in the state. Traumatology is a surgical residency specialty. Trauma fellowships are also in place. It is not known how many of the trauma trained surgeons stay in the area after their residencies or fellowships are completed or the extent of statewide recruitment efforts.

The level and distribution of trauma trained physicians is currently difficult to quantify on a statewide basis. Trauma education for physicians in designated trauma centers is guided by ACS verification standards. However, as is true with trauma education for nurses, the state does not require submission of information on physician trauma training as a part of the trauma designation process. Trauma education is not currently a requirement for physicians providing trauma care in non-verified hospitals in the state. Therefore, little is known about the level and distribution of trauma trained physicians in non-verified hospitals either.

DPH-OEMS

The DPH-OEMS enables EMS and trauma education through regulation. It is responsible for regulating basic EMS provider education for certification and

recertification. OEMS does not currently have a formal process for monitoring the delivery of trauma specific education across the state.

RECOMMENDATIONS

Education

? **The State Trauma Committee should develop and recommend standards for trauma education to be adopted by DPH. Standards should include types, levels and frequency of trauma training for:**
  - All prehospital provider levels
  - Designated trauma center nurses, physicians and allied health care professionals
  - Non-designated hospital nurses, physicians and allied health care professionals

? The State Trauma Committee, in conjunction with DPH, should conduct a trauma education assessment to establish the current status of the trauma training and education and identify gaps.
  - A formal template should be developed for the process
  - All EMS agencies and all hospitals should be included
  - The status of injury control education at all levels of the system should be included

? The State Trauma Committee should utilize information from the assessment to develop and recommend initial trauma training strategies to meet the identified needs. Optimally, the results of the assessment should be utilized to guide the development of goals, objectives and action strategies for the updated state trauma system plan that will ensure an adequate trauma workforce across Connecticut.

? DPH should formally establish (in rule or by policy) standards for system-wide trauma education based on the recommendations of the State Trauma Committee.
  - TNCC for nurses in trauma care areas
  - PHTLS /BTLS (other prehospital courses) for all EMS personnel sponsored by the hospitals
  - Board Certification in Emergency Medicine or current ATLS training for all physicians that work in emergency departments

Prehospital Care

Emergency Medical Services Management Agency

Purpose

Each system should identify an agency that is ultimately responsible for prehospital care.

The administration of this agency should include:

- *A medical director familiar with, experienced in, and currently involved in prehospital care*
- *A medical director whose qualifications are commensurate with his/her scope of responsibility in the EMS system*
- *Quality improvement education and monitoring functions performed by the medical director or designee*
- *Sufficient support staff, including a system administrator experienced in prehospital management*

Educational programs should include:

- *Trauma education integrated with the prehospital training program*
- *Continuing education tied to the quality improvement system*

Criteria evaluated by the agency should include:

- *Triage, patient delivery decisions, treatment, and transfer protocols integrated with the EMS and trauma system*
- *Ongoing quality improvement of triage/treatment/transfer criteria*
- *Policies, procedures, and/or regulations regarding on-line and off-line medical direction*

Certification to provide patient care by the agency should be based on standardized written and practical examinations given at regular intervals.

A system-wide quality improvement program should be established by the lead agency.

CURRENT STATUS

The lead agency for the EMS and trauma system activities in the state of Connecticut is vested in the Department of Public Health, Operations Branch, Office of EMS Section. The current leadership provided by the Department of Public Health Commissioner and the Chief of the Operations Branch and the Chief of the EMS Section is knowledgeable by practice and experience in issues of EMS and emergency care and is very supportive of the needs and issues faced by the EMS and trauma system in the state.

The state EMS medical director is board-certified in emergency medicine with fellowship training in EMS. He continues to practice emergency medicine clinically in both a community hospital and a Level I Trauma center. He is currently dedicating the majority of his practice as the State EMS Medical Director with the Department of Public Health in activities of EMS, trauma systems development (through the Office of EMS) and domestic preparedness activities (through the Office of Public Health Preparedness). He also serves as the Commander for the CT-1 DMAT team and the Medical Director of the Capital Region Metropolitan Medical Response System.

The state trauma coordinator is a part-time position in the Office of EMS that is held by an experienced emergency/trauma/flight nurse/paramedic. Her other duties with the OEMS is of the state EMSC program manager. She is also actively involved in domestic preparedness planning activities. In addition, the OEMS staff includes a full-time epidemiologist and additional support staff. There are several committees and subcommittees that serve in an advisory capacity to OEMS and support the EMS and trauma activities within the state. The composition of many of those committees is defined in regulation and includes stakeholder and consumer representation.

There are legislation and regulations (EMS: #19a-179-1 and trauma system: #19a-179-1) that define the roles and responsibilities of the OEMS for EMS and for the state trauma system as well as the roles and responsibilities of agencies, institutions and personnel operating within the system. The legislation and regulations are currently in the process of being updated to reflect modifications that have occurred since initial implementation of those regulations. Regulations include requirements for initial and continuing education of EMS personnel, staffing of vehicles and equipment requirements for prehospital services, communications issues, EMS charges and reporting and quality improvement

requirements. The state also drafted a state Model Trauma System plan in 1995 and is currently beginning a review and update to that plan.

Quality improvement of prehospital activities generally occurs at the sponsoring hospital level, although there are prehospital agencies in the state that conduct intra-agency quality improvement. There is regulatory protection for quality improvement activities conducted by the sponsoring hospitals. However, there is no similar protection for EMS agencies performing intra-agency quality improvement!

The state of Connecticut has adopted the NHTSA National Standard Curricula for all levels of EMS personnel for initial education. As such, initial education includes issues specific to management of adult and pediatric trauma patients. Initial certification or licensure of personnel by the state is through examination by the National Registry of EMTs (NREMT) for EMT-Basic and EMT-Paramedic personnel. There is no requirement for maintaining NREMT certification for subsequent state certification/licensure periods. Many ALS personnel participate in Prehospital Trauma Life Support (PHTLS) training. Sponsoring hospitals provide continuing education programs specific to issues identified through that hospital's quality improvement program. There is limited performance improvement conducted by the OEMS. When that does occur, it is generally in the context of a specific complaint or issue that rises to sufficient concern to involve the state. There is no routine quality improvement conducted at the state level. A limited amount of routine EMS data is provided to the state on a regular basis by EMS agencies.

Prehospital protocols are generally developed at the local level by the sponsoring hospital and its medical director. This leads to variations in protocols throughout the state. Two of the five EMS regions have developed region-wide protocols and there is discussion about establishing statewide EMS protocols to provide greater consistency of patient care activities throughout the state. State trauma regulations define those trauma patients who should be transported to one of the verified trauma centers. State regulations also define those situations in which on-line medical direction must be established relating to the care of the trauma patient.

Although there is a regional coordination structure in place for the five EMS regions in the state, there is little support for or coordination of activities at the regional level.

RECOMMENDATIONS

? Update state trauma plan based on the *HRSA Model Trauma System Planning and Evaluation* to reflect the current status of and the proposed modifications to the state's trauma system activities.

? **Update the EMS and trauma systems regulations to reflect the dynamic nature of current practice of out-of-hospital trauma care and the proposed improvements to the systems.**
    - **Those regulations should be "permissive" in nature to allow more rapid modifications in the state trauma system as needs arise in the future.**

? Develop statewide consistent EMS trauma care protocols.
    - This will help eliminate variability and inconsistencies that currently occur among the many sets of protocols.

? Expand the position of the state EMS medical director to full-time to allow for appropriate and needed physician oversight of the state trauma system.

? Formalize the reporting and QI activities of OEMS relating to trauma activities to ensure availability of the OEMS to perform its mandated quality improvement role.

? Provide specific support and guidance to the regional structure to allow for expanded coordination and consolidation of trauma system activities.

Ambulance and Non-Transporting Medical Unit Guidelines

Purpose

Each system should establish guidelines for non-transporting medical units (for example, quick response units) and for ground and air transportation that consider regulations, medical control, geographic boundaries, and topography.

- *Personnel should, at a minimum, be trained and certified/licensed at the EMT-basic level and should have off-line medical direction. On-line medical direction should be available.*

- *Safe, reliable ambulance transportation, whether by ground, air, or water, is a critical component of an effective system. The type of transport should be matched to the system's topography and demography. Distribution of ambulances should facilitate appropriate and timely emergency response for the trauma patient.*

- *Standards, policies, or procedures governing hospital destination must be in place.*

- *Protocols concerning the mode of transport of the trauma patient (air or ground) should exist. The method of coordination between air and ground and procedures for rendezvous should be specified by protocol. These protocols should be carefully coordinated between the emergency medical services system and the trauma system.*

- *Protocols should exist concerning the interface between transporting and non-transporting units.*

- *A process for ambulance certification/licensing and decertification must be in place to ensure that vehicles and services meet minimum standards, including the minimum equipment recommended by the American College of Surgeons and/or state lead agencies.*

- *Mutual aid agreements must be in place among emergency medical services providers to provide adequate ambulance coverage when resources within a system have been exhausted.*

- *There must be interagency agreements with public safety agencies (for example, police and fire) that address security and safety of the injury scene.*

Medical Non-Transporting Unit Guidelines

- *A process for medical non-transporting unit (for example, quick response units, rescue units providing a medical response, and so on) certification/licensing and decertification must be in place to ensure that vehicles and services meet minimum standards.*

- *Personnel should, as a minimum, be trained and certified/licensed at the first-responder level and should have off-line medical direction.*

- *Protocols should exist concerning the interface between transporting and non-transporting units.*

- *There should be a placement strategy for non-transporting medical units to ensure they are located in areas where ambulance response may be delayed.*

- *There should be written agreements between non-transporting and transporting units clarifying, among other things, when non-transporting unit personnel ride with transporting units.*

CURRENT STATUS

State regulation outlines the specific staffing requirements for transporting and non-transporting services and the requirements for the four levels of EMS personnel. All levels of personnel require off-line medical direction; all personnel levels, except MRT, require on-line direction, provided to field personnel by hospital staff through CMED resources. Testimony indicated that there is frequently wide variability in the quality of medical direction provided by various hospital personnel. The OEMS licenses EMS agencies and licenses/certifies EMS personnel. Very specific ambulance equipment requirements are established in regulation.

The state has 169 jurisdictions (townships, cities or multiple cities) that are serviced by 189 agencies. It is the responsibility of the individual jurisdiction to identify the primary service area provider and to define the level of resources to be provided to that area. Services throughout the state include volunteer, municipal, hospital-based and commercial organizations. The majority of services in the state provide BLS care, although there are ALS services available to the majority of state's population based on mutual aid and ALS fly-car resources. It is also up to the individual jurisdiction to define acceptable level of service and response, including response time standards. Local agencies have to establish back-up agencies and to have mutual aid agreements in place with those back-

up agencies. Testimony indicated that, in many areas of the state, there may be prolonged response by mutual aid agencies due to lack of available personnel resources.

As noted above, local resources, standards and protocols are defined by local jurisdictions. Protocols are in existence that defines the interaction between transporting and non-transporting agencies. Regulations also define (by vital sign and mechanism of injury criteria) those trauma patients that require transport to a trauma center.

Most EMS patient care records (PCR) are currently paper-based. Little prehospital patient care information is provided to the state. This allows little opportunity for the OEMS to analyze prehospital information. Prehospital data is entered into trauma registries manually by those trauma centers abstracting into their registry. The state is currently Beta-testing a prehospital electronic patient record that will be implemented statewide in January, 2007. Hopefully, this will allow inclusion of more complete prehospital information into trauma databases and will allow the OEMS more complete and reliable information for prehospital system analysis.

Connecticut has two air ambulances available through the Hartford Hospital LIFE STAR program – one is based at Harford Hospital and the other based at William Backus Hospital. This program is Commission for Air Medical Transport Systems (CAMTS) accredited. The helicopter is staffed with RN/EMT-P and RT/EMT-Basic or EMT-P and will transport trauma patients to the closest (based on time) Level I or II trauma center. All hospitals in the state have landing zones/pads. There are some limitations in a air medical response based on weather conditions but testimony indicated few situations in which helicopter was not available due to being already committed to flight, resulting in the need to dispatch an out-of-state mutual aid helicopter.

Trauma centers report that they do not divert local critical trauma patients although they may refuse patients in transfer. Diversion protocols are developed locally and regionally; notification of hospital diversion status, when it does occur, is through CMED to other local and regional prehospital agencies and hospitals.

Testimony indicated that there are limited and variable resources for interfacility transfer of critically injured patients. Those transfers are frequently affected by commercial ambulance services. There are situations in which those transfers must occur using local transporting resources – situations that often remove local resources from their primary service areas for prolonged periods of time and raise questions about the availability of and need for additionally trained personnel to complete these transfers at the appropriate level of care. Rarely are hospital personnel available to assist with those transfers. The state does not have a recognized level of critical care transport personnel nor are there educational programs available.

? Revise regulations to update equipment requirements and allow for more flexibility / adaptability in the future to reflect dynamic changes in trauma care practice ("permissive" format).

? **Work with local jurisdictions & the OEMS Volunteer Committee to provide guidance on level of service needs and response times standards for local areas of the state.**
  - There should be more consistency throughout the state in personnel staffing levels and response time standards to avoid excessive delay in EMS response and on the reliance of local jurisdictions on mutual aid coverage by surrounding jurisdictions.

? Revise the capabilities of the state hospitals for providing consistent on-line medical direction to field personnel.
  - Work with the OEMS medical advisory committee and the Connecticut Chapter of Emergency Physicians to investigate the current status of on-line medical direction and develop appropriate standards and educational needs to achieve those standards

? Investigate current resources and needs for critical care transport resources in the state.
  - It is felt that this would likely result in the OEMS developing regulations to address transfer of critically injured patients, consistent with appropriate federal regulations.
  - Subsequently, education programs should be developed by the appropriate educational resources in the state.

Communications System

Purpose

Each system should develop a prehospital communications system that is fully integrated with the remainder of the EMS and emergency/disaster preparedness systems. Beginning with the universal systems access number, the communications network should provide for prioritized dispatch, postdispatch instructions, dispatch-to-ambulance communication, ambulance-to-ambulance communication, ambulance-to-hospital communication, and hospital-to-hospital communication to ensure adequate EMS system response and coordination.

- *Medical direction and dispatch should be coordinated.*
- *An EMS dispatch protocol should be utilized.*
- *A 911 or enhanced 911 system should be in place and should receive all public calls that request EMS response to trauma patients.*
- *All dispatch centers, vehicles, aircraft, and base stations should be equipped with adequate communications systems. Equipment must ensure that there are minimal geographic areas where communications cannot be established and that at least 95% of communications attempts are successful.*
- *Priority dispatch and postdispatch instruction protocols should be in place.*
- *A quality improvement program should be in place.*

CURRENT STATUS

The entire state of Connecticut is covered by E9-1-1. There are specific Public Service Answering Points (PSAPs) dedicated for receipt and handling of cellular calls. It was noted that there are communications dead spots in the state for both radio and cellular communications.

Requests for 9-1-1 medical response are handled by 109 PSAPs for the 189 EMS services throughout the state. Some PSAPs are also responsible for dispatch of EMS resources. In other jurisdictions, dispatch occurs through CMED resources while some EMS agencies have separate and independent dispatch centers. This reflects significant inconsistency throughout the state regarding responsibility for dispatch activities. In addition, PSAPs are not directly tied to all EMS dispatch centers in the state. The PSAPs use one of three “state approved”

priority dispatch programs although resource dispatch (priority dispatch) configuration and pre-arrival instructions vary among PSAPs, again without consistency. Medical direction is required for all dispatch programs; QI of the dispatch is up to the local PSAP. Medical QI activities are not currently protected from protection. There is no reporting of dispatch activities or their QI activities to the state and no apparent other oversight activities.

Prehospital (field) to hospital communications (on-line medical direction) is coordinated via the 13 CMEDS situated throughout the state. EMS agencies are assigned specific CMED resources based on their geography and sponsoring hospital. The system is not completely interoperable throughout state in that not all EMS agencies are able to communicate with all hospitals in the state (due to PL code configurations). There are radio dead spots in the state. CMED resources are utilized for routine hospital on-line communications. CMEDs also have an MCI/disaster coordination function. The CMED facilities are able to communicate among themselves. The MEDNET system (HEAR frequencies) is available as a backup communications system.

Agencies have communications capabilities between their vehicles and their own dispatch center.

Satellite telephone capabilities are available to the CMEDs and are being expanded to include hospital emergency departments and other public safety / emergency management resources.

As part of the domestic preparedness planning activities, monitoring of hospital bed status currently occurs. On a twice daily basis, hospitals report current bed status (OR, ICU, burn, med, surg, peds) directly to LifeStar dispatch which serves as the repository of the information. This information is routinely reported to the Commissioner and is available to a limited number of stakeholders with secure web site access. The collection of this information can be done hourly if needed. It is currently not used real-time, however, for routine for hospital bed or diversion status reporting.

RECOMMENDATIONS

? **Strongly consider consolidating and standardizing PSAP and dispatch activities throughout the state.**
  - The current system with many individual jurisdiction PSAPs and dispatch centers appears to be excessively costly, inefficient and uncoordinated.
  - Fiscal efficiencies experienced by this consolidation might allow reallocation of funds to other prehospital services (response and transporting resources).
  - Work with the PSAPs and dispatch centers to ensure consistency among the priority dispatch protocols throughout the state.

? **Consider consolidating CMED functions based on the regional EMS structure.**
    - The current system of CMED operations appears to be excessively costly, inefficient and uncoordinated.
    - Fiscal efficiencies experienced by this consolidation might allow reallocation of funds to other prehospital services (response and transporting resources).

? Investigate additional interoperable communications needs with other public safety, emergency management and hospitals.
    - This is consistent with the continuing domestic preparedness activities and will improve the state's communications capabilities as part of DP activities.

? **Establish regular, real-time web-based reporting of hospital status based on the current web-based hospital survey mechanism.**
    - This reporting mechanism should be real time and accessible to all affected stakeholders – prehospital, hospital, emergency management, etc.

Emergency/Disaster Preparedness Plan

Purpose

Each system should develop a prehospital emergency/disaster preparedness plan that is fully integrated with the remainder of the EMS system, local government, private sector, and acute care facilities.

- *The system should have periodic educational exercises with post exercise review.*

CURRENT STATUS

Local hospitals and EMS agencies are required to have disaster response plans on town-by-town basis with some regional coordination. This includes mutual aid needs for the jurisdiction.

Responsibility for state emergency management activities rests with the Department of Emergency Management & Homeland Security. Domestic preparedness planning activities within the Department of Public Health reside in the Office of Public Health Preparedness and the Office of EMS, both located within the Operations Branch of DPH. There are five planning regions in the state that mirror patient care referral patterns and that are similar (but not identical) to five EMS regions. OEMS and OPHP are included on the state's homeland security council.

Relating to health care domestic preparedness planning activities, the state is divided into two tiers, focused on two public health centers of excellence – Hartford Hospital and Yale New Haven Health systems. These centers have developed strong relationships with regional hospitals in their respective tier. Both centers have focused on specific planning areas of strength. Hartford Hospital hosts the web-based disaster planning training resource and conducts regional education and exercising. It is also working on prehospital health care surge resource needs modeling. Yale New Haven Health System has focused on the state health care provider credentialing program (ESAR-VHP) and Medical Reserve Corps (MRC). It is also developing modeling programs for hospital surge capacity needs and has conducted a large number of health care education programs.

Additional disaster response assets for the state include the Capital Region Metropolitan Medical Response System (MMRS) program and CT-1 Disaster Medical Assistance Team (DMAT) team (which is both a state and federal resource). The DPH has sponsored the development of a 100-bed mobile hospital which will soon be operational. This asset, which is intended to be

operational within a 12 hour activation time includes capabilities for 30 ICU beds; 10 step-down beds; and 60 ambulatory / non-ambulatory beds. It is modeled after the CDC Type C facility. The facility will be initially staffed by CT-1 DMAT staff who will be replaced and supplemented by additional trained, credentialed personnel from the state.

As a result of the domestic preparedness planning activities, there has been increasing interaction / collaboration between health care and public health disciplines. Testimony indicated that, although this interaction has improved, there are areas of the state where this interaction needs to continue to grow.

Resources throughout the state includes active participation in multiple local, regional and national disaster exercises, including 2005 top officials (TOPOFF-3) federal exercise.

RECOMMENDATIONS

? Continue the collaboration of OEMS and OPHP at the state level to ensure appropriate health care stakeholders involvement in state domestic preparedness planning activities.
    - With this leadership occurring at the state level, it is hoped that similar collaboration will continue and potentially expand at the regional and local levels.

? Improve communications and interactions with public health departments at local levels
    - This will facilitate planning and response capabilities for daily and unique response / disaster situations.

Definitive Care Facilities

Trauma Care Facilities

Purpose

Injured patients should be delivered in a timely manner to the nearest appropriate facility. Regionalization of trauma care involves participation of hospitals that have the resources necessary to provide care for injured patients. A needs assessment study will provide an inventory of available resources, both human and physical, in the area to be regionalized. Trauma systems should be "inclusive" in nature, which means that the trauma care system will:

- *Address the needs of all injured patients requiring hospitalization for injury*
- *Utilize all qualified medical resources*

The trauma system plan should integrate all facilities into an inclusive system or network of definitive care facilities to provide a spectrum of care for all injured patients.

Trauma centers

- *The trauma system lead agency should provide uniform standards for Trauma centers (The criteria established by the American College of Surgeons Committee on Trauma and the Resources document are examples.)*
- *The trauma system lead agency should determine the optimal level and number of Trauma centers, based on anticipated volume, available resources, and geography. This determination should be based on the needs assessment study. Reevaluation should be based on the quality management process plus volume and need.*

Other Trauma Care Facilities

- *The role and responsibility of other acute care facilities within the system should be defined and integrated in the evaluation process.*
- *The role and responsibility of specialty centers (pediatric, burn, spinal cord injury) should be defined and integrated in the evaluation process.*

Designation Process

- *Describe the process for selecting and designating Trauma centers.*
- *Describe the process for monitoring all treatment.*
- *Describe process for re-designation and de-designation.*
- *Describe the process for adding other centers or deleting existing centers.*

CURRENT STATUS

There are 31 acute care hospitals in Connecticut, plus a VA hospital. The Connecticut Trauma centers are located primarily along population and travel corridors. The current trauma center distribution was not based on a formal needs assessment and plan, but rather on voluntary hospital verification (by the American College of Surgeons) followed by State designation and then attrition over time. For this reason, the distribution and level of trauma centers may not be optimal.

Trauma patients in three geographic corners of the state do not have rapid access to Level I or II in-state trauma centers (NW, NE, and SE). Massachusetts' Bay State Medical Center does serve as a de facto trauma center for some citizens of Connecticut. The central area of the state has adequate trauma center coverage as does the southwest, each of these areas with Level I and II centers. Currently, there are two Level I trauma centers (Hartford Hospital and Yale New Haven Hospital) and 8 Level II trauma centers in Connecticut. There are two additional hospitals planning ACS verification visits to become designated as Level II trauma centers. No plans currently exist to encourage additional hospitals to participate at any designation level (I, II, II, or IV) as part of a statewide inclusive trauma care system, which is authorized in Connecticut statute and regulation.

The hospitals represented during the site visit do not impose a destination charge for team activation, but nonetheless those hospitals realize a financial benefit from trauma patient care. This positive financial circumstance is clearly not ubiquitous across the U.S. The site review team was told that the State has a mechanism for compensating hospitals for uncompensated care, but not for physician compensation. Much of the cost of creating and maintaining the Connecticut trauma system has been borne by the current trauma centers.

One presentation for the site review team stated that the following questions were unanswered in Connecticut:

- What is the total number of trauma patients being cared for at designated trauma centers?

- How much trauma care is being rendered at non-designated centers?
- Are outcomes better at *Connecticut* Trauma centers vs. non centers?
- How does the distribution of trauma centers relate to the trauma patient volume of a given region? (Is there a role for resource sharing among Trauma centers?)
- How much trauma care is un-reimbursed?

These types of questions are important to answer in every region and state. Formation of an inclusive trauma care system with trauma patient data collection from all hospitals will help answer these questions in Connecticut.

RECOMMENDATIONS

? **All hospitals should be designated as trauma centers as part of an inclusive trauma care system.**
  - A needs assessment based on patient volume and geography should be performed to determine optimal or adequate number and locations of Level I and II Trauma centers.
  - DPH should have clear authority to determine how many trauma centers are needed, what level, and where. The trauma system may not function optimally with voluntary designation alone.
  - A mechanism to encourage verification and designation of Level III and possibly Level IV Trauma centers should be established. State verification criteria would ideally be consistent with American College of Surgeons guidelines.

? **Trauma data should be submitted from all hospitals to the statewide trauma registry in the most cost-effective manner possible.**

Interfacility Transfer

Purpose

Central to the concept of an inclusive trauma system is the provision for appropriate and expeditious transfer, when necessary, of injured patients between acute care facilities. The decision to transfer a trauma patient should be based on objectively agreed upon criteria that pertain to transfers to both higher and, where appropriate, lower levels of care. Established transfer criteria will minimize discussions about individual patient transfers and ensure optimal patient care. It is essential that the transfer agreements include provisions required under the Consolidated Omnibus Reconciliation Act (COBRA) and subsequent revisions of the Act.

Interfacility transfer is particularly important in the following situations:

- *Linkage between the urban and rural components of a trauma system*
- *patients requiring specialty facilities, such as pediatrics, burns, and spinal cord injury, or the need for further rehabilitation*
- *Movement of patients between acute care facilities and trauma centers*
- *Appropriate transfer of patients between trauma facilities*
- *Movement of patients from trauma facilities back to local communities when appropriate*

The process of transferring injured patients from acute to rehabilitation care facilities will be facilitated by establishing written transfer agreements between acute and rehabilitation care facilities in the system. The decision to transfer spinal cord injury (SCI) and traumatic brain injury (TBI) (severe/ moderate TBI) patients to rehabilitation facilities that provide specialized programs in SCI and TBI should be based on objectively agreed upon criteria.

Inherent in the transfer of any trauma patient is feedback from the receiving to the transferring facility.

- *The trauma system should ensure that interfacility transfers occur in a timely fashion commensurate with patients= clinical needs*
- *The trauma system should establish standards for the mode of transportation and qualifications of transport personnel*

- *The trauma system should have a model transfer agreement*

- *The trauma system should ensure that all interfacility transfers are based on patient needs and are in the best interest of the patient*

- *Trauma centers should have transfer agreements with rehabilitation centers that provide specialized programs in SCI and TBI*

- *Trauma centers should have transfer agreements with rehabilitation centers that provide inpatient and intensive outpatient rehabilitation for patients with diagnoses other than SCI or severe/moderate TBI, such as mild TBI, amputations, burns, or other major injuries deemed appropriate for rehabilitation*

- *The trauma system should be cognizant of the cost issues and ensure the most cost-effective strategies that are consistent with optimal care*

- *A process (CQI) to measure patient outcome as it relates to transfer should be in place.*

CURRENT STATUS

Interfacility transfer in Connecticut is by both ground and air. The sole in-state air medical service is a two rotorcraft service based in Hartford, serves the entire state, and occasionally assists in neighboring state crises. Ground transport is based on 169 separate EMS jurisdictions and 189 EMS services. These services are primarily volunteer (in absolute number of services), but also incorporate municipal, commercial, hospital based, and nonprofit services. Interfacility transfer is almost always by the commercial service's paramedics, rarely a nurse.

One CT presenter stated, "Documentation of trauma systems operations costs for prehospital care providers is not currently possible". Clearly, data can be obtained and analyzed for cost/charges, timeliness, care, and outcome of transported and transferred trauma patients. Efforts are already underway in Connecticut to standardize the prehospital data collection process. No data currently exist to define whether interfacility transfer in Connecticut is effective or timely. None of the CT attendees were able to tell the site review team whether more trauma patients are transferred out of the state or in from neighboring states.

While some smaller hospitals have interfacility transfers agreements with Level I and II trauma centers, this does not appear to be universal. Repatriation to the local community following care of life or limb-threatening injuries at the trauma centers does not occur.

RECOMMENDATIONS

? The CEMSMAC should review the interfacility transfer criteria on an annual basis and revise them as necessary.
  - Consideration should be given to removal of interfacility transfer criteria from regulations to more easily facilitate necessary changes.

? A full report should be developed to determine the adequacy of interfacility transfer of trauma patients and should be collected by DPH.
  - Data needed include, but are not limited to: Correct patient, correct time, correct destination, correct transport mode, cost/charges.

? A model transfer agreement should be written to serve as a consistent statewide template identifying essential components.

? Transfer agreements should be formalized between all appropriate hospital pairs (non-trauma center and trauma center).
  - Consideration should be given to language that facilitates 'back triage' for repatriation of trauma patients.

? Data should be obtained and regularly examined regarding cross border transport of trauma patients, both out of and into Connecticut.

Medical Rehabilitation

Purpose

As an integral component of the trauma system, rehabilitation centers provide coordinated post-acute care for trauma patients who have sustained catastrophic injuries, resulting in permanent or long-standing impairments.

The trauma system should demonstrate strong linkages and transfer agreements between designated trauma centers and rehabilitation centers located in its geographic region (in or out of state).

- *The trauma system should convene a joint liaison committee to be comprised of appropriate health professionals from designated trauma centers and rehabilitation centers (for example, trauma surgeon, physician with expertise in rehabilitation, physical therapist, occupational therapist, nurse case manager, hospital administrator, and so on).*

- *Input from payors should be sought.*

- *The trauma system should ensure that the rehabilitation process begins in the acute care facility as soon as possible.*

- *To maintain clinical expertise and skills, each rehabilitation center that provides specialized programs in SCI and TBI should have a critical mass of patient volume in SCI and TBI.*

- *Each rehabilitation center that provides a specialized program in TBI should have an appropriately qualified Medical Director for TBI. It is recommended that the Medical Director of the TBI Program meet all of the following requirements: (a) have two years of experience in brain injury rehabilitation and/or completed a fellowship in brain injury, and (b) have board certification in a specialty field of medicine.*

- *Each rehabilitation center that provides inpatient and intensive outpatient rehabilitation for trauma patients should have an appropriately qualified Medical Director for Rehabilitation. It is recommended that the Medical Director of Rehabilitation meet the following requirements: (a) have two years of experience in rehabilitation and/or completed a fellowship in a rehabilitation specialty, and (b) have board certification in a specialty field of medicine.*

- *The trauma system should encourage clinical pathways for the major traumatic diagnoses that affect patients' rehabilitation outcomes.*

- *The trauma system should identify and collect, at appropriate times, the necessary data elements for analyzing patient outcomes and evaluating the effectiveness of the trauma system. Data to be collected may include:*
  - *new injury admissions per year of SCI, TBI, and dual-diagnosis patients to each rehabilitation center*
  - *indicators of patient severity, including complications (for example, ASIA classification system for SCI, Glasgow coma scale for TBI)*
  - *time between acute care and initiation of rehabilitation*
  - *acute care length of stay*
  - *length of stay at rehabilitation center*
  - *functional independence measure (FIM) score*
  - *facility or location to which patient was discharged*
  - *type of outpatient rehabilitation care received (for example, hospital-based, home, nursing home).*

- *The trauma system should have data exchange procedures that will provide feedback (for example, patient outcomes, effectiveness of delivery system, and so on) to the trauma, acute care, and rehabilitation care providers.*

- *The trauma system should conduct long-term outcome research in rehabilitation of trauma patients and provide for appropriate dissemination of research results.*

CURRENT STATUS

Adequate rehabilitation facilities exist within the state to provide for most patients requiring inpatient rehabilitation for brain, spinal cord, or orthopedic injuries. Only a few patients receive their inpatient rehabilitation out-of-state. There are four inpatient rehabilitation facilities, twelve CARF-accredited outpatient rehab facilities, and two long-term ventilator rehabilitation centers. Pediatric patients requiring rehabilitation are often cared for in New York.

A Rehabilitation Subcommittee of the State Trauma Committee exists. Its membership, roles, and responsibilities are not clear.

RECOMMENDATIONS

? The Rehabilitation Subcommittee of the State Trauma Committee should be multidisciplinary and intimately involved with the development of the new state trauma regulations and new state trauma plan.

? **Rehabilitation data (including serial scores) should be submitted to the State Trauma Registry from each rehabilitation facility as well as from all acute care hospitals and trauma centers.**

? Transfer agreements between trauma centers and rehabilitation facilities should be developed and implemented, if they do not exist, to ensure appropriate and timely transfer of the trauma patient (to optimize potential return to prior level of function).

Information Systems

Purpose

The ideal trauma care system has an information system which provides for the timely collection of data from all providers in the form of consistent data sets with minimum standards. The information system should be designed to provide system-wide data that allow and facilitate evaluation of the structure, process, and outcomes of the entire system, all phases of care, and their interactions. An important use of this information is to develop, implement, and influence public policy. Policies and procedures to facilitate and encourage injury surveillance and trauma care research should be developed, including:

- *System-wide plan for collection and collation of trauma care data and cost data should be encouraged*
- *Definition of minimum data sets*
- *Well-defined roles and responsibilities for agencies and institutions regarding data collection*
- *Process to evaluate the quality, timeliness, and completeness of data*
- *Process to ensure appropriate patient and provider confidentiality*
- *Data acquisition from all the appropriate sources. These can include:*

    1. *Law enforcement, crash, and incident reports*
    2. *Prehospital care reports \ run sheets*
    3. *Emergency department data*
    4. *Trauma registry*
    5. *Hospital discharge data, including rehabilitation and specialty care facility*
    6. *Medical examiner/coroner records*
    7. *Death certificates*
    8. *Payor records*

Attempts to benchmark outcomes against larger data sets (such as NTDB).

CURRENT STATUS

In many regards, Connecticut is an information rich environment. Trauma stakeholders have access to data from crash records, hospital discharge data, and medical examiner records. The Department of Public Health has data analysts and epidemiologists to assist in the analysis and reporting of these data. Additionally, the state has received support from the National Highway Traffic Safety Administration as a Crash Outcome Data Evaluation Systems (CODES) state which has given them experience in probabilistic and deterministic linkage of disparate data sets. Lastly, individual trauma centers have been collecting and data for internal quality improvement activities, in some cases, for nearly a decade.

The trauma stakeholders have demonstrated their ability to use these non-trauma specific data to generate reports that support various activities. A report titled "State of Connecticut Injury Data: Fiscal Year 1996" demonstrates the ability to take non-trauma specific data (UB 92) and create a descriptive analysis of the extent and cost of injury in the state. Multi-year data from this same source has been acquired and is reported to have been "partially analyzed" but has not been formally reported. Impediments to the additional analysis and reporting of these and other data were noted to include IRB considerations/approvals, time, prioritization, and resource availability.

Two key pieces of the trauma information system puzzle are currently in various stages of implementation. These are the prehospital data collection system and the trauma registry. The status of the prehospital data system is characterized by the following attributes.

- Software selected
- NHTSA compliant
- Data acquisition to start 2007

The trauma registry has undergone a challenging evolutionary process that was stated to have been the source of persistent frustration among many of the trauma centers. As mentioned previously, individual trauma centers have been collecting and analyzing their own data as part of their demonstration of commitment and capacity during their respective verification visits from the American College of Surgeons, Verification Review Committee. Beginning in 1995 and continuing to the present there has been a sustained effort from the Trauma Registry subcommittee of the Trauma Committee to bring those disparate data systems together in an aggregate nature to provide for the possibility of systems performance improvement and benchmarking activities. This has involved the identification and acquisition of a common software platform and the development of a standardized data dictionary.

With the acquisition and dissemination of a common software platform to all facilities across the state, and with the standardization of nomenclature that allows for those facilities choosing to maintain alternate versions of trauma register software, the stage has been set to create a comprehensive injury data registry that could include the vast majority of seriously injured patients, regardless of where they receive care for those injuries. Unfortunately, efforts to download individual trauma center data into the system registry have, to date, been unsuccessful. The current timetable for this initial data upload is sometime in calendar year 2006.

Trauma registry software is provided without cost to each facility. However, information technology and data input costs are borne by the hospital. Funding to provide for the ongoing maintenance of the software appears to be secure at this juncture, emanating from a 9-1-1 surcharge. However, this source of revenue is not without competition from public safety entities.

The lack of system-wide data from a trauma registry was, arguably, noted to be the single greatest impediment to the continued development and maturation of the trauma system in Connecticut. The SVT persistently heard reference to the fact that interest had waned or stagnated on a variety of initiatives, e.g. injury prevention, due to the absence of these data.

The implementation of a comprehensive trauma data collection system is as much about trust and about leadership between the trauma system stakeholders and the Department of Public Health as it is about the generation of injury control data. It is imperative that these data systems be developed and used to the benefit of the stakeholders in a timely and efficient manner. Failure to achieve this goal will result in additional erosion of collaboration and cooperation between and among key trauma stakeholders, to the detriment of the injured patient.

RECOMMENDATIONS

? **The State Department of Public Health – Office of EMS continue, with all due diligence, efforts to establish a system trauma registry.**
  - The system trauma register must be completed in a manner that makes it convenient for individual trauma centers to upload data.
  - The system trauma register should be is used to generate system-wide reports for quality improvement and benchmarking activities on a regularly scheduled basis with inviolate timetables.

? The trauma registry/data sub-committee of the statewide trauma committee should continue with and strengthen efforts to ensure consistency and accuracy of trauma register data elements and entries at the system and individual trauma centers through ongoing quality improvement, training and technical assistance efforts.
    - The trauma registry/data sub-committee should meet individually with each other sub-committee and the trauma committee as a whole and specifically determine what analyses and reports are essential to assist them with their respective committee charges.
    - Reports should be designed and regularly generated to support the activities of these sub-committees.

? The trauma registry/data sub-committee of the statewide trauma committee should establish clear guidelines, processes and approvals for the use of data for evaluation and research projects.
    - The sub-committee should actively engage potential researchers both within and outside the trauma community (e.g. schools of public health) in the discussions concerning access to and protection of the database to ensure confidentiality of the information.
    - As system-wide data become available potential researchers should be informed of its availability and encouraged to submit potential research projects for consideration.

? Mechanisms to offset the cost of information technology and data entry costs associated with the hospital trauma registry should be explored to ensure the full participation of all facilities in the trauma system.

? **The State Department of Public Health – Office of EMS continue, with all due diligence, efforts to establish a NEMSIS compliant statewide prehospital patient care record system.**
    - The prehospital patient care recording system should, foremost, support the continuity of patient care during the prehospital to hospital transfer of patient care.
    - The prehospital data system should have the capability of automatically populating the trauma registry record in those facilities which chose to create such a link.
    - The prehospital data system must be easily uploaded into a centralized prehospital system repository of data.
    - The prehospital central data system must have the ability to be deterministically linked on a record-by-record basis to the system trauma registry.
    - Finally, it must be used to generate system-wide reports for quality improvement and benchmarking activities on a regularly scheduled basis with inviolate timetables.

- Data from the prehospital and trauma registry data sets should be augmented with other data and information including crash records, emergency department data, hospital discharge data, including rehabilitation and specialty care facility; medical examiner/coroner records; death certificates; and payer records to further describe the attributes and benefits of the statewide Connecticut trauma system.

- The Department of Public Health and the State Trauma Committee should actively seek opportunities to use data and reports generated from the sources described in this section to inform policy makers and the public about attributes and benefits of the statewide Connecticut trauma system.

Evaluation

Purpose

The trauma care system should monitor its own performance and the performance of its components. This evaluation should include continual reassessment of system operations and goals as they relate to patient needs, availability of appropriate resources, and costs. It is essential to measure compliance to standards, document system effectiveness, and identify quality improvement opportunities. System evaluation should include:

- *System-wide quality management plan*
- *Lead agency responsible for system quality management plan*
- *Monitoring of system performance and performance of individual components*
- *A periodic review and update of system standards as they relate to patient needs, system resources, and costs*
- *Periodic review and update of trauma facility standards*
- *A quality improvement process that assesses the effectiveness of the trauma system*
- *A quality improvement process that measures the compliance to standards by each agency and institution*
- *A process to ensure patient and provider confidentiality*
- *A process to require and ensure appropriate facility quality management programs and appropriate interaction between facility quality management programs*
- *A process to determine the changes and incentives (risks and benefits) in caring for trauma patients*

CURRENT STATUS

It is recognized that the DPH is the State lead agency for the system quality management plan and this is mentioned in regulations promulgated in 1995. The state of Connecticut utilizes the ACS as the standard for trauma hospitals at all levels; as the ACS modifies the standards hospitals are expected to update their capabilities accordingly and maintain the ACS verification status. Quality improvement programs are in place at the verified trauma centers – all Level I and Level II Trauma centers have been verified – but it is uncertain of the status of QA and QI processes in non-verified trauma centers other than the requirement for the maintenance of JCAHO accreditation. There are currently no verified Level III or IV Trauma centers by the ACS in the State. Prehospital providers are invited to the QA and QI processes with the Level I and Level II centers and this information is peer protected. There is little QA and QI activity on a statewide basis at this time – participants await the data from the statewide trauma registry to examine areas of concern and then address issues. Confidentiality statutes are already in place and are due to be updated to comply with HIPPA statutes in 2006. Anecdotal evidence was presented as to possible delay in access to trauma care when the helicopter was not available. However, no statewide information is available at this time.

The number of dispatch centers seems excessive – testimony was presented regularly several centers in one area managing a single digit number of emergency calls between them. Data should be developed to allow consolidation where possible. Evidence was given relating to the paucity of hospital beds – especially ICU beds – in the State for the trauma patient. Emergency department diversion appears to be a problem in the State mostly due to medical patients "boarding" in the ED. This does not delay acceptance of scene trauma patients but high receiving hospital ICU occupancy can delay interfaculty trauma transfers of patients that require ICU care. Data on hospital occupancy is collected twice a day by LIFE STAR dispatch but it is uncertain how this information is disseminated for the benefit of prehospital and community hospital trauma providers.

Testimony was provided regarding paramedics working 36 hours at one stretch and of nursing availability being difficult in community facilities – especially in the ICU and the ED. Nursing availability in rehabilitation facilities should also be addressed. Although physician extenders are being utilized in many trauma facilities there was concern expressed that attending staff are not subject to the same limitations as physicians in training and are working more than 80 hours per week.

Standards exist for the provision of prehospital care. There are Standards for certification and licensure at the First responder, basic EMT, EMT-I and EMT-P

level. There are standards for ambulances although there is consideration of revision at the time of the consultation visit.

RECOMMENDATIONS

- **As the trauma registry program is implemented, statewide reports should be in place that monitor patient needs, resource utilization and costs.**

- A decision should be made of the verification process to be utilized for Level III and IV trauma centers within the State; once selected this should be implemented. A target date for such a verification process should be selected.

- Consideration should be given of a web-based information system that is easily available both to community facilities and EMS providers to allow instant identification of the system resources available for the transfer of trauma patients.

- Verification of high ICU occupancy – especially of the pediatric patient – this should be confirmed and if confirmed additional capacity – including staff and beds – should be developed.

- Special efforts should be made to evaluate the availability and duty hours of all personnel involved in trauma patient management.

Research

Purpose

The system should facilitate and encourage trauma-related research. The system should facilitate epidemiological research in pre-hospital care, acute care, rehabilitation, and prevention.

- *There should be a process to facilitate access to data for trauma-related research, including, but not limited to:*

    a. *Cost-effective research*
    b. *Outcomes research*
    c. *Epidemiology*
    d. *Injury control research*
    e. *Quality-of-life research*

- *There should be a process to acquire funding for research.*

- *There should be a definition of the research requirements from each system component and for each type of facility.*

CURRENT STATUS

Trauma research is performed mostly at the individual investigator or hospital level. Examples of trauma research were given (both adult and pediatric) as well as examples of research leading to system improvement and prevention, the improvement of the Merrill Parkway was cited as an example. The Connecticut Hospital Association currently collects both hospital and emergency department data and this is available for analysis. Connecticut is a CODES State and has a plethora of information within the DPH but limited resources within the DPH for in-depth analysis. The DPH has an Institutional Review Board (IRB) already in place for research oversight. Information of safety belt usage is already available but information of alcohol usage and drug ingestion is not collected at this time. A contract has been developed with Digital Innovation Inc for the software for the state trauma registry and the EMS data set and efforts are ongoing to implement both the statewide trauma registry and the statewide EMS report programs. It is hoped that after implementation of these programs, data will be available to guide both quality assurance, research and prevention programs. The infrastructure for oversight of these databases is already in place and awaiting program implementation early in 2006. Reports will be available from the statewide trauma registry in 2006 and EMS data following soon after; provisional data reports have already been identified and ad hoc reports can also be

generated by the vendor under the contract. Funding is not available at the state level to support the collection of such data from smaller hospitals. Information was presented that Level I and II facilities could provide mentorship to other trauma facilities in the collection and entering of such trauma data.

It is anticipated that the entry of the EMS data will be wireless by the EMS provider. The vendor for both the trauma registry and the EMS data set is the same, and should facilitate linkage. The existing regulations governing the confidentiality and access to the data have been in place for several years and there is awareness that they need to be updated to conform to HIPPA. This is planned for 2006.

There is a good relationship with the medical examiner's office. Medical examiner cases of deaths in the trauma center are provided with autopsy information to include in the trauma registry. It is uncertain if all deaths from trauma in the state had autopsies. Likewise deaths in community facilities or at the scene at this time are not provided to the DPH in an organized fashion.

RECOMMENDATIONS

- **Review and update as appropriate existing regulations to allow confidentiality and oversight of research data. (Both the hospital and prehospital components.)**

- **Data reports should be provided to members of State Legislature and the public media in an effort to stress the importance of trauma as a preventable disease and the cost effectiveness of trauma prevention programs.**

- Pediatric programs should be highlighted as examples of trauma system success.

Focused Questions

Question Posed

1. How should we best state our goals, objectives and policies that guide the state trauma committee?

Surveyor Response

The goals, objectives and policies of the State Trauma Committee should be the goals, objectives and policies of the *trauma care system* and are driven by establishing what is best for the patient.

Legislation Recommendation #2 states: The Department of Public Health with input from the State Trauma Committee should update the Statewide Trauma System Plan. Follow the structure of the *HRSA Model Trauma System Planning and Evaluation*.

- Focus on strategies for moving from the current status to a vision of excellence for Connecticut's system. Describe specific measurable objectives such as; *by December 31, 20XX all licensed hospitals in CT will be submitting data to the Statewide Trauma Registry on a quarterly basis.*

System Development Recommendation #3 states: The CEMSMAC should develop measurable trauma system performance standards.

- An example of the desirable level of specificity would be; *Children with an ISS of 16 or > will arrive at a Level I pediatric trauma center within 4 hours of discovery.*

In stating goals, objectives and policies for the CT trauma system, the best format will be:

- Specific
- Measurable
- Enforceable

As these goals, objectives and policies are determined; adoption with stakeholder consensus will foster commitment.

Many state EMS offices post copies of their state trauma plans on their websites. You may wish to look at FL, AZ, and MD as specific examples. The National Association of State EMS Officials (NASEMSO) is also currently involved in an effort to standardize a template for state trauma plans.

Question Posed

2. Is a centralized statewide CMED dispatch system possible in a state the size of Connecticut? If so, at what expense? How would it be funded?

Surveyor Response

The second recommendation in the Communications section references possible consolidation of the CMED system. A definitive answer to this question would require more analysis of the workload requirements of the current CMEDs, but, at face value, it appears that the current system with multiple CMED facilities is expensive and potentially inefficient, although it does afford system redundancy. It does appear that some centralization would be appropriate. It is important to establish what capabilities the CMED system, as currently configured, has that must be retained. Equally it will be important to determine what features of the current CMED model should be improved.

One model of centralization would be to reduce the number of CMEDs to one per EMS region. This approach offers some possibility of improved economic efficiency while also affording redundancy and overlapping coverage.

Another approach would be to revise the CMED model to a single statewide facility. This approach would appear to offer optimal economic and operating efficiency but raises other questions about system control, redundancy, coverage, etc.

The state of Idaho operates a central EMS communications facility covering a much larger geographic area than CT although probably serving a smaller population. In the Idaho model, some of the larger cities operate local communications centers in addition to the statewide center. The Idaho center is exploring linkages with their statewide intelligent highway system, offering the possibility of new technologies and funding.

The state of Maryland also operates a central communications facility that coordinates helicopter flights and trauma center destination determination as well as other services that parallel CT CMED operations.

How to fund whatever approach CT ultimately decides to adopt should be considered as part of the other recommendations on system financing. CT will need to identify the costs associated with each of the available options. Who is funding what today and for how much will need to be determined. The feasibility of diverting current funding to a different model may suggest a best approach. The financial implications of a different model should be considered in the larger context of trauma system needs. If cost savings are achieved with a new CMED model, it would be appropriate to divert the saved funds to other trauma system priorities.

Question Posed

3. What are the most viable methods to raise money to fund a statewide trauma system in a state such as Connecticut?

Surveyor Response

Background: Testimony provided during the fact-finding sessions indicates that the trauma centers appear to be financially stable, though clearly affected by prevailing healthcare industry trends. Additionally, testimony indicated that some trauma centers do not charge destination fees. No specific testimony was provided on the current financial viability of the non-participating acute care centers. 152 of 189 ambulance services collect fees for services.

Testimony provided during the fact-finding sessions indicated that non-general funds are currently used to support trauma system activities

- 911 surcharge taps are used to support the 10 CMED centers and the purchase and maintenance of the trauma registry.
- Public Health Service Block grants (supplementing general funds) support the executive director and administrative support in the five EMS Regions.
- CDC and HRSA bioterrorism grants support ten bioterrorism planning consultants, two regional Centers of Excellence and the Distance Learning Center at the Hartford Hospital.
- HRSA Trauma-EMS Systems Program grants support a 0.4fte state trauma manager and training.

Trauma system costs are in fact public health costs. As such, funding support should be generated through public funds. There are multiple methods in use by states to support statewide trauma system systems. There is no single best answer to this question, and the most appropriate method will vary depending upon the state and circumstance. Currently, Connecticut receives a portion of the 911 Service Charge to support the activities identified above. Testimony provided indicated a reluctance to pursue a larger portion of the revenue stream. Additional testimony from the DOH Legislative Liaison indicated that the Executive Branch is reluctant to support additional general fund support or special taxes for trauma system support. The most likely source of funding would be from one-time surplus funds.

Recommendations

Assess and Plan

- Perform an in-depth trauma and EMS system assessment to identify system strengths and weaknesses.

- Charge the Connecticut EMS Advisory Board with developing a strategic plan for the near, mid and long term.
- Develop a specific system and component pro forma budgets for near, mid and long term which detail existing financial inputs from all sources including Federal, State, Municipalities, trauma centers and EMS services.

Cost Savings

- Evaluate significant infrastructure redundancies for consolidation or reduction to reduce system costs including, but not limited to, a reduction in the number of PSAP and CMED facilities.
- Continue joint planning with the Connecticut Department of Homeland Security to identify opportunities to pursue activities of mutual benefit.

Funding Identification and Development

- Pursue one-time surplus funding to support a public information and education program based upon the proposed strategic plan, seeking long-term general fund support for the Connecticut trauma system.

Question Posed

4. Has a statewide interfacility transfer agreement been developed that could be applied to Connecticut?

Surveyor Response

Background: The desired outcome of the inter-facility trauma transfer process is a rapid, appropriate transfer of the patient and medical information to the receiving trauma center. This can be aided by the use of preexisting interfacility transfer agreements and model transfer criteria. Appropriate and timely transport of traumatized patients from non-trauma centers to Level I Trauma centers has been demonstrated to reduce morbidity following traumatic injury (Mackenzie, 2006.)

Currently, in Connecticut there is regulatory authority requiring the transport of injured patients meeting the field triage criteria to the appropriate Level I or II Trauma centers. Further there is a requirement to provide specific documentation in the patients medical record describing the reason the patient was not transferred [to a trauma center] when taken initially to a hospital that is not a trauma center.

Ad-hoc testimony from the participants suggested that the process for inter-facility transfers by and large proceed smoothly, though at times there were circumstances in which the referring facility required multiple telephone calls to arrange the transfer. Additional testimony indicated that transfers to the two pediatric facilities could be problematic during times when the two rotor-wing ambulances were unavailable or grounded due to adverse weather.

It was reported that inter-facility transfer agreements do not exist between all smaller [non-designated] hospitals and the Level I and Level II Trauma centers to which they send their patients. Further, repatriation to the local community hospital following care of life or limb-threatening injuries at the trauma centers is not reported to occur.

The experience of other states in developing statewide interfacility trauma transfer documents can assist Connecticut in developing a viable statewide approach. Several states were identified as having some level of statewide interfacility transfer guidelines for trauma patients. It must be noted that no data or other information was available on their utility. Other states may have additional guidelines that were not found while researching this question. Statewide documents include the following:

- Massachusetts has developed a document entitled Statewide Trauma Field and Triage and Point of Entry Plan for Adult and Pediatric Patients. The criteria for consideration of transfer is basic and models essential ACS guidelines.
- Florida has developed a document called Trauma Transport Protocols and Interfacility Transport Guidelines for Patients from Non-Trauma Centers to Trauma Centers. They have developed an interfacility transfer poster for emergency departments to utilize in making transfer decisions.
- Arizona has developed a document called Interfacility Transfer of Injured Patients: Guidelines for Rural Communities.
- The statewide California EMS Authority has developed detailed transfer guidelines for pediatric patients under its Emergency Medical Services for Children program.

Current ACS interfacility transfer guidelines are utilized as core components in many of the statewide interfacility documents and remain the gold standard for essential considerations.

Recommendations

- Consider conducting a more extensive inquiry on statewide interfacility trauma transfer criteria and guidelines. Include a request for information on how the use of the guidelines is monitored on a statewide basis and patient outcome information if available.
- Consider a statewide “guideline” for inter-facility transfer criteria instead of regulating it. This will allow for timely modification based on system needs determined through an ongoing QI process.
- Require formal trauma transfer agreements between all hospitals that receive trauma patients and designated trauma centers, and between all designated trauma centers. Consider tying the requirement into hospital licensing and hospital designation

- Formally monitor transfers as part of system QI process.
- Develop strategies for repatriation of trauma patients, when medically appropriate, to referring facilities. Monitor patient outcomes through the system QI process.

Question Posed

5. How would you suggest funding the newly required full time trauma prevention positions at level I trauma centers? Can this come from a funded statewide injury prevention program?

Surveyor Response

Background: Preliminary information shared by the American College of Surgeons Committee on Trauma indicate that level I trauma centers will be required to have a full-time injury prevention coordinator on staff in order to meet the Level I ACS verification requirement under the new criteria. Level I Trauma centers play a principal role in the trauma community due to their stature as the lead facility in the catchment area. The Level I Trauma center is also frequently best able to collect and analyze injury data through its trauma registry and research arm.

The state of Connecticut funds two full-time injury prevention specialists within the Department of Health. Several acute care facilities including one of the two LeveI trauma centers have injury prevention staff. A number of injury prevention coalitions exist within the state government and the acute care facilities and there was testimony provided during the fact-finding sessions that there is some coordination between the Department of Health and the acute care facilities.

Quality injury prevention activities provide direct benefits to the community. It is not unreasonable for the state to share the cost of establishing, maintaining and evaluating injury prevention coordinators at the level I trauma centers. In fact, this may have an over-all benefit to statewide injury prevention activities by providing a mechanism for closely coordinating the activities of the existing injury prevention coordinators within the Department of Health with those of the Injury Prevention coordinators at the level I trauma centers and other acute care facilities.

See Exhibit A for methods states have used to raise non-general fund revenue to support trauma systems activities.

Question Posed

6. Does simulated education play a role in trauma care? If so, how would you suggest structuring a program and how would you recommend its funding? How would you centralize the program?

Surveyor Response

Simulation training does play a role in the education of trauma care providers at all levels but at this time the penetration of such program is still in infancy. Examples of such programs that presently exist and are available are the following:

1. Skills training and maintenance for prehospital and emergency personnel. (Intubations, complex trauma patient assessment, IV skills, use of techniques such as compartment pressure monitoring etc)
2. Team management – such as code team training, trauma team training and communication, how to communicate with families etc
3. All of the core competencies required of residents can now be simulated and tested using validated testing methods.
4. Rhode Island is using the simulation environment to train and evaluate first responders in disaster scenarios – and producing interesting research and new training modalities.
5. Computer modeling of disaster scenarios and biological "what if" scenarios are already in existence.

Although computer PC based programs are commercially available simulation manikins such a Sim Man and Trauma man are expensive. Further – it may be advantageous to have a "simulation center" at a major medical center and then use such a center for all types of training – both prehospital and hospital based staff. Such program might lend themselves to philanthropic support or can be supported by several clinical services within that institution with possible involvement of a medical school. The present issues of patient safety also provide an impetus for patient teaching to be performed in the simulation environment.

A partial listing of potential user and hence supporters might be the following:

1. Prehospital agencies (including helicopter personnel) who would support simulation training (and examination) for skills and team management for paramedics and EMT's.
2. Medical students for patient evaluation.
3. Residency programs for core competencies and skills training.
4. Nursing staff for code call skills maintenance, communication training, training for patient management etc.

5. Attending staff for “core competencies” and verification of skills for re credentialing. It is understood that anesthesia is looking at the simulation environment for recertification at the national level.
6. Disaster scene evaluation and management.
7. ATLS and ACLS training and evaluation.
8. DMAT and military training.

Depending on the design and purpose of such a simulation center it might be supported by “user fees” – such as for ACLS and ATLS; educational dollars (for medical students and residency purposes) philanthropic support and potentially Federal support (if such a facility can be immediately converted and be used for additional surge capacity or is used for military, disaster and DMAT training.

Question Posed

7. Indigent and self-pay patients are an issue in every state. How would you recommend this state address the issue?

Surveyor Response

Connecticut has the highest per capita income of any state. Despite this fact, uncompensated care is an appropriate concern of hospitals and physicians in the state of Connecticut. The specific long-term best answer to this question will be determined by the experience of the trauma system and its member hospitals and providers over time.

States have identified various sources to compensate hospitals or in some cases, hospitals and physicians for indigent care. These sources include general funds, tobacco settlement funds, “sin taxes”, vehicle licensing taxes, and others (see MS, WA). The specific mechanism depends on competition with other state issues that citizens and the legislature feel are sufficiently important to warrant expenditure of public funds.

To improve hospital compensation for trauma patient care, many U.S. facilities apply destination fees of several thousand dollars to each injured patient requiring trauma team activation. Many third-party payers honor these charges. Destination fees do not seem to be used in Connecticut, but remain an available option.

Physician compensation for uncompensated trauma care is another difficult issue. One solution that hospitals have used to assist physicians is on-call pay for various specialists. These monies compensate the physician for being available to provide care for all trauma patients, including those who have no insurance or other resources. Additionally, some hospitals also compensate physicians (per patient) for each uninsured patient seen.

Undocumented persons as trauma patients are particularly challenging, including financial issues. These individuals are problematic in many ways for the State, the hospital, and trauma care providers.

Question Posed

8. How would you suggest the aeromedical evacuation system be expanded, and how would you suggest this system be paid for?

Surveyor Response

Based on testimony provided during the hearings, it is unclear that the state's air medical system currently needs to be expanded. The current air medical program, LIFE STAR, operates two helicopters based in two sites – Hartford Hospital and William Backus Hospital. These two bases cover the central and eastern areas of the state. Testimony indicated that, based on geography and locally available resources, there have been very few situations over the recent past in which there was a need for air medical transport in the southwestern area of the state, particularly for scene response needs.

Testimony also indicated that there are certainly some situations in which a helicopter response to hospital (for interfacility transfer of critical trauma patients) or scene locations is prohibited by weather conditions. However, there have not been any identified situations in which mutual aid air medical resources from outside the state have been needed or requested due to unavailability of LIFE STAR.

As the data collection program increases, and through the quality improvement program, it will be easier for the state to investigate and analyze potential needs for additional air medical resources.

Question Posed

9. Should the statewide trauma system be funded to support disaster and BT preparedness? If so, how?

Surveyor Response

Since September 11, 2001, there has been an enhanced emphasis on the need for, and funding of, statewide bioterrorism preparedness and response planning. Coincident with this emphasis on bioterrorism, there have been similar calls to recognize the important role that trauma systems play in the preparation for and

response to man-made and natural disasters including potential bioterrorism events.

Testimony and documentation provided during the consultation describe what appears to be a robust all-hazards preparedness capability that is significantly integrated with the state trauma system as described below:

Redundant medical care capabilities established within the two regional Centers of Excellence. These Centers of Excellence roughly divide the state in two on an North-South axis, each containing a level I trauma center and one or more Level II Trauma centers and a rotor-wing ambulance. In addition, each center has developed additional mass casualty response capabilities utilizing either out-transferring of patients into regional acute care facilities to accommodate medical and trauma surge capacity (Yale-New Haven) or the utilization of a turn-key 100 bed portable hospital (Hartford Hospital).

In addition, the state has a DMAT team based out of Hartford that is capable of deploying in or out of state as requested in an emergency situation. The Connecticut Army National Guard post has also provided training and logistical support. HRSA and CDC Bioterrorism funds have supported the hiring of ten planning consultants that are housed in the five Emergency Management regions, supported the purchase of statewide trauma registry software, the development of a web-based resource inventory that includes bed availability information for all of the trauma and acute care facilities. Additional HRSA Bioterrorism funding has been utilized to purchase Mark I kits for prehospital care providers and, more recently, to fund educational opportunities. Since September 11, 2001 Connecticut has participated in two large exercises including TOP OFF 3 and another multi-facility, multi-tiered scenario with a significant burn component.

Based upon testimony, it is apparent that the OEMS and homeland security offices have coordinated to utilize both CDC and HRSA Bioterrorism funding to support, in some fashion, the Connecticut trauma system. As Connecticut strategically plans for continued trauma system enhancements there will presumably be numerous opportunities for additional collaboration.

Recommendations

- Evaluate and continue mutually beneficial initiatives with the Office of Homeland Security.
    - Consider seeking Office of Homeland Security funding to support the completion of the State self-assessment associated with the Model Trauma System Planning and Evaluation document as a principal step in review and update of the existing Connecticut State trauma plan.

Question Posed

10. How would you suggest the state educate the public on trauma system, and on prevention programs?

Surveyor Response

See Operational and Clinical Components: Injury Prevention and Control. Educating the "public" (everyone) on the injury prevention and the trauma system is a key element of ongoing system development. It is a critical undertaking for statewide system success.

- Educating the public on injury and the trauma system increases the likelihood of multilevel support for the system ranging from entities with statewide focus to local residents. This is important to securing and maintaining the resources necessary for a highly functional system at all levels.
- Integrating education on injury prevention into the culture increases the likelihood of organizations *and* individuals making *safer choices* (ex. incorporating an IP philosophy - safer product choices, protective devices, less risky behaviors, appropriate health care benefits).

One of the longstanding barriers to achieving an *informed public* is that there has not yet been a strong unified voice for injury prevention and trauma systems in our states or across the nation. The voice for heart disease and cancer prevention loudly calls the public to take action. Their sponsoring organizations are highly successful in garnering support (including financial support) for their causes. The public understands the importance of preventing heart disease and cancer. Developing a strong voice for injury prevention and the trauma system is equally important to overall system success, particularly on a statewide level. According to the 2004 Harris Poll – The American Public's Views of and Support for Trauma Systems - once the public understands the significance of the injury problem and what a trauma system does, "nine in ten…indicate it is extremely or very important for their state to have a trauma system".

The results of this trauma system survey and the past success in public education on heart disease and cancer suggest that a continuously *informed public,* from State legislators to the local residents, is pivotal to a success.

Recommendations

Include language in administrative code and/or statute that assigns the responsibility for educating the "public" about injury prevention and the trauma system to CT Department of Public Health

Develop permanent resources in the State office to coordinate a statewide effort to educate the public on injury prevention and the trauma system.

- An permanent FTE in the State office to support *coordination* of a injury prevention and trauma system education (marketing) program focusing on educating the *public* through collaborations with entities that have a significant impact in the state
- A budget to support the program (development and ongoing) – a budget priority

Task an Ad Hoc committee of the State Trauma Committee to develop and recommend a formal *plan* to educate the public on the injury prevention and the Trauma System. Include additional key stakeholders as appropriate.

- Establish a Vision for *an educated public*
- Determine roles of the State office and Ad Hoc Committee for a statewide injury prevention and trauma system education program
- Assess and analyze the current environment
    - Identify statewide organizations/entities that can influence support of the trauma system (ex. State Legislature, Hospital Association, professional medical associations – ex. ACEP/ ACS, State Board of Health, State Fire Association, Statewide IPPE groups, state broadcasters association, Insurance Board/group, Board of Education, etc.)
        - Identify which are involved in trauma system or prevention education for the public and to what extent
    - Identify grassroots local organizations that can influence support at local levels
        - Identify which are involved in trauma system or prevention education for the public and to what extent
    - Identify how each identified organization/entity could benefit from formally engaging in supporting public injury prevention and trauma system education. For those that are involved, identify how they currently benefit and expand ideas.
    - Identify their risks of formally engaging
    - Assess what has been done across the nation that might be "borrowed"
        - Utilize Trauma EMS Librarian list serve, HRSA Resource Centers, ACS-COT, ATS, etc what other states have done and their successes or lessons learned

- Plan Development
    - Determine the best opportunity for success in approaching and enlisting key decision makers from statewide organizations, etc - enlist them
    - Enlist key consumers/survivors, philanthropists, etc

- Draft a Plan for an ***informed public***
  - Reconfirm the vision and mission
  - Reconfirm assessment information – check assumptions about organizations and groups with participants and modify as needed
  - Develop a few goals for an integrated statewide injury prevention and trauma system education program
  - Develop achievable, time-limited, measurable objectives with commitment for who will be responsible for the work
  - Select a few critical objectives to start with and develop detailed action plans and timelines – focus on building a united movement that is sustainable
  - Determine the review, approval and dissemination process up front

- Monitor the whole process – hold yourselves accountable - refine the plan as needed – develop periodic reports on the projects progress - acknowledge and give credit – be highly visible to the "public"

- Evaluate - completion of objectives

- Maintain momentum by recycling the planning cycle at intervals – Let the vision guide the process – build more detail into the plan over time

Question Posed

11. How would you best provide for pediatric trauma care in the state of Connecticut?

Surveyor Response

At present, there are two facilities with the resources to serve as regional resources for pediatric trauma care. Connecticut Children's Medical Center, in the north central part of the state, is a full service, free standing children's hospital that is currently in the process of seeking verification as a Level I Pediatric Trauma center in partnership with the Level I Adult Trauma center at Hartford Hospital, located immediately adjacent to Connecticut Children's Medical Center, and with which it is connected via underground tunnel. Yale New Haven Children's Hospital is an integral part of the Yale New Haven Hospital and similarly is a full service children's hospital within a hospital and is already verified as a Level I Pediatric Trauma center in collaboration with the Level I Adult Trauma center at Yale New Haven Hospital. Both children's hospitals admit approximately 350 injured children annually, of whom 60-80 require and receive pediatric intensive care. Both children's hospitals serve as the primary university teaching hospitals for their respective medical schools, the

University of Connecticut, School of Medicine, and the Yale University School of Medicine. Both children's hospitals appear to be strong and solvent, to enjoy the commitment of their boards of directors for priority pediatric trauma care, and to be adequately funded. Both children's hospitals are blessed with adequate full time pediatric emergency medicine, pediatric critical care medicine, and pediatric surgical physicians and nurses. Yet, both are similarly challenged, as are most children's hospitals nationwide, by a shortage of qualified pediatric surgical subspecialists, especially in neurological and orthopaedic surgery. Nevertheless, the State of Connecticut appears far richer in pediatric trauma resources than most other states, as nearly every pediatric trauma patient is within no more than about one hour's ground transport time from a major children's medical center, even in peripheral areas of the state, which are geographically closer to pediatric trauma resources in adjacent states – Albany Medical Center for the northwest part of the state, Bay State Medical Center for the northern part of the state, University of Massachusetts Medical Center for the northeast part of the state, Hasbro Children's Hospital for the southeastern part of the state, the Morgan Stanley Children's Hospital of New York Presbyterian and the Schneider Children's Hospital of Long Island Jewish Hillside Medical Center in the southwestern part of the state, and the Westchester Medical Center for the western part of the state – all of which can be rapidly accessed by an extensive system of interstate highways. In addition, the LIFE STAR Helicopter is available for priority transport of children to virtually all of the above facilities. Finally, it is estimated that 95% of paramedics have successfully completed the Pediatric Advanced Life Support Course and approximately 80% of paramedics have already completed the Pediatric Education for Prehospital Professionals Course, in addition to initial and continuing medical education in pediatric trauma care in basic and refresher emergency medical services training. Thus, it appears that there is a breadth and depth of resources available to the injured children of the state of Connecticut that are matched in few other cities or states nationwide.

With respect to pediatric prehospital care, there is no statewide pediatric medical director or pediatric trauma medical director to provide pediatric specific indirect medical control, including child specific performance improvement, and no organized system for pediatric specific direct medical control, although there are pediatric specific field trauma triage criteria, and as previously noted, both ready access to, and good penetration of, education in pediatric trauma care.

With respect to pediatric trauma research, the pediatric trauma programs at the two children's hospitals have been active. The pediatric trauma program at the Connecticut Children's Medical Center has participated in a number of studies conducted by the American Pediatric Surgical Association Outcomes Committee and Outcomes Center, particularly on pediatric solid organ injuries, and pediatric burns. In addition, the Connecticut Children's Medical Center Pediatric Injury Prevention Program has produced a number of research studies in the area of pediatric injury prevention. More recently, its Pediatric Disaster Preparedness Program has developed a Pediatric Toolkit to aid non-pediatric centers in

readying themselves for disasters involving children. The pediatric trauma program at Yale New Haven Children's Hospital has also focused on solid organ injuries, and total radiation dose in children who also undergo computed tomography at referring hospitals, although the Yale program is relatively young, and these data have not as yet been published.

With respect to pediatric injury prevention, not only the two children's hospitals, but also most other trauma centers, have local programs to prevent childhood trauma. With the single exception of the Connecticut Children's Medical Center Pediatric Injury Prevention Program, which is partially funded by the Robert Wood Johnson Foundation through its Injury Free Coalition for Kids, most programs are locally funded, chiefly via in kind support from the trauma program medical director and trauma program manager. Unfortunately, the Division of Injury Prevention and Control of the Department of Public Health has only two employees, one of whom is likely to re-assigned once the federal Preventive Health and Health Maintenance and Maternal and Child block grant funds are no longer available after the end of federal FY 2005-2006 on September 30, 2006. These resources are likely insufficient to support statewide pediatric injury prevention activities, let alone all injury prevention in the State of Connecticut, while the Injury Prevention Subcommittee of the State Trauma Advisory Committee, has not met during the past several years.

In summary, it appears that the children of the state of Connecticut enjoy a richness of pediatric trauma resources unavailable in most other areas of the nation. Still, important challenges exist for pediatric trauma care in the State of Connecticut. The lack of a fully functional statewide trauma registry makes it very difficult to track the number, let alone the outcomes, of seriously injured children treated at hospitals without special pediatric capabilities, or for that matter, the pediatric centers themselves. Moreover, the fact that the Pediatric Subcommittee of the State Trauma Advisory Committee has not met in approximately six years has allowed potential opportunities to be missed – such as development of an explicit list of pediatric interfacility transfer criteria, backed up by written transfer agreements confirming statewide institutional compliance; and review of pediatric hospital discharge data from the statewide hospital administrative database in lieu of a fully functional Statewide Trauma Registry.

Still, as with so many other components of the state trauma system, informal arrangements exist that substitute for the more formal relationships which are specifically articulated in most fully organized statewide trauma system. In one sense, formal relationships may be less important for the pediatric component of the trauma system than for the adult component because pediatric resources are regionalized de facto, if not de juro. Yet, while pediatric trauma experts in the State of Connecticut believe that most seriously injured children are treated in regional resource pediatric trauma centers, either in the state or out of state, the fact is that the Statewide Trauma Registry is not as yet sufficiently developed to allow this data to be retrieved or reviewed. As such, it is impossible to know with

certainty if seriously injured children are in fact receiving their care in regional resource pediatric trauma centers, or to confirm the high quality of care provided.

As so often happens following regionalization of specialty care services, there is a perception that experience in non-pediatric centers with seriously ill or injured children has substantially declined, to a point where non-pediatric providers stated that they felt far less comfortable with sick children that once was the case. While there exists no data to suggest that quality of care has been compromised, the fact is that when helicopter transport is unavailable, it can take an hour or more for ground pediatric transport teams to arrive at hospitals in outlying areas. Closer relationships between regional resource pediatric trauma centers and non-pediatric hospitals may assist in relieving this perceived sense of anxiety, particularly with regard to telephone consultation and performance improvement.

Thus, while pediatric trauma system coordination remains an ongoing challenge, the rich resources available to the trauma system suggest obvious solutions that can be readily implemented. Specific recommendations are delineated below.

Recommendations

- Improve statewide coordination of pediatric trauma care.
    - Immediately reconstitute the Pediatric Subcommittee of the State Trauma Advisory Committee to meet at least quarterly, and provide staff support.
    - Fund both the State Emergency Medical Services for Children Program Manager and the State Trauma Program Manager as full time positions.

- Improve pediatric oversight of prehospital trauma care.
    - Develop statewide mechanisms for pediatric oversight of prehospital trauma care, including pediatric specific indirect and direct medical control.
    - Review and revise existing statewide field triage criteria for pediatric trauma patients and develop statewide protocols for pediatric trauma care.

- Ensure timely referral of pediatric trauma patients to pediatric trauma centers.
    - Develop explicit interfacility transfer criteria for pediatric trauma patients and ensure they are included in statewide interfacility transfer agreements.
    - Review pediatric trauma outcome data from the State Trauma Registry once it becomes available, and make appropriate recommendations.

- Improve regional coordination of pediatric injury prevention and disaster care.
    - Ensure ongoing collaboration with the State Emergency Medical Services for Children Program, particularly in the area of pediatric injury prevention.
    - Develop relationships with children's hospitals in nearby states to assist in staffing additional pediatric critical care beds in the event of a disaster.
    - Develop public private partnerships in support of pediatric trauma care.
    - Consider public private partnerships between the Department of Public Health and the regional resource pediatric trauma centers to jointly fund the pediatric trauma program manager and the pediatric trauma registrar positions in the regional resource pediatric trauma centers.
    - Encourage the regional resource pediatric trauma centers to hire one additional pediatric surgeon each as pediatric trauma medical directors to direct these centers, and to assist in directing the statewide pediatric trauma program, in collaboration with the Department of Public Health.

Question Posed

12. What do you see as the best format/structure for data collection, processing and utilization?

Surveyor Response

There is no one "best" structure to achieve the goals of a comprehensive injury data collection and reporting system. That said, there are certain attributes that such systems should possess. These include: reliability, validity and robustness. These attributes must be further delivered in a package that is user friendly and ensures absolute confidentiality.

The existing data subcommittee is engaged in ensuring that the attributes described in the preceding paragraph apply to the Connecticut Trauma System Registry and Prehospital Data System Registry. The inclusion of various trauma system managers in discussions pertaining to the evolution of the trauma registry is essential. Likewise, it is assumed by the TSC although not explicitly stated in testimony that similar involvement of prehospital agency leaders and medical directors is occurring in a similar fashion. The inclusion of these representatives represents the "intake" point of contact. Additionally, those individuals most interested in the "output" of the registry including the State Trauma Committee, CT Office of EMS, medical directors, trauma managers, researchers, pubic information/education representatives and legislative representatives should also have representation and input.

Specific, written policies and procedures for accessing and using the data should be developed, fully vetted, made widely known and fairly applied so that the "contents" of these two long-awaited system databases can be easily accessed and utilized to further trauma system development in Connecticut. The data subcommittee should be representative, fairly constituted and apply the policies and procedures concerning data in a judicious and equitable manner with an eye for the continuous improvement of reliability, validity and robustness of the data sets while ensuring protection of individual patients and providers.

Appendix A: Site Visit Team – Biographical Sketches

ART COOPER, MD, FACS-Pediatric Surgeon

Doctor Cooper was born in Brooklyn, New York in 1949. He obtained his baccalaureate at Harvard College and his doctorate at the University of Pennsylvania School of Medicine. He was trained in general surgery at the Hospital of the University of Pennsylvania and in pediatric surgery and surgical critical care at the Children's Hospital of Philadelphia – and is certified by the American Board of Surgery in all three specialties. He is currently Professor of Surgery at the Columbia University College of Physicians & Surgeons – from which he also holds a master's degree in human nutrition – and is Director of Pediatric Surgical Services and Director of the Regional Trauma Center at the Harlem Hospital Center. He is a member of numerous professional and academic societies, has edited six books and written more than two hundred scientific articles, textbook chapters, and policy statements, serves on a variety of national and regional expert and advisory committees, and is a recognized authority in the fields of pediatric surgical nutrition, critical care, trauma, and emergency medical services for children – particularly prehospital emergency care and trauma systems development – as well as physical child abuse, and the surgical care of children with the human immunodeficiency virus.

ALASDAIR K.T. CONN, MD, FACS-Team Leader

Alasdair Conn is Chief of Emergency Services at the Massachusetts General Hospital in Boston. After receiving his medical degree in Edinburgh, Scotland and his surgical training in Toronto, Canada, Dr. Conn became a staff surgeon at the Maryland Institute of Emergency Medical Services Systems (MIEMSS) in Baltimore. In addition, he was the EMS Director for the State of Maryland and the Medical Director of the Maryland State Police aviation program. In 1985, he transitioned to Boston where he initially worked at Boston Medical Center as a trauma and general surgeon, as well as Medical Director of a newly initiated consortium hospital based helicopter program (Boston MedFlight). In 1988, Dr. Conn moved to his present position and has been taking trauma call at the MGH since that time. He is still actively involved in prehospital issues; he continues to work with Boston MedFlight; and has worked with the Commonwealth of Massachusetts as Trauma Director, helping to draft the initial trauma legislation that was signed into law in the year 2000. He is an active participant in the drafting of regulations for the Massachusetts Trauma System. Dr. Conn has also served as Chairman of the American College of Surgeons Massachusetts Committee on Trauma and Chief of Region I (New England) ACS Committee on Trauma.

CHRISTY FECCERI, RN-Observer

Christy Frecceri, RN is a nursing Trauma/ED consultant from California. Christy most recently has been an independent nursing consultant for approximately 5 years. The majority of the focus of her work in the consulting field has included the following:

Providing hospitals with advice, onsite preparation and education in the area of trauma, emergency medicine and critical care services. Development of new trauma programs, and provider of education for medical and nursing personnel in caring for trauma patients. Christy also provided consultative services to write a plan for Bioterrorism preparedness in a 5 county region in California.. She was interim EMS Trauma Coordinator for the Santa Clara EMS Agency this past year initiating the process for inter-county MOU's as well as monitoring overall performance of trauma care in the county, ensuring delivery of quality care in two Level I Trauma Centers, and one Level II Center. Monitoring system integration of patient care, prehospital care, and patient destination throughout the region. Provided trauma nurse consultation and prepared a report for the agency in reviewing Regional Medical Center's request for Level II designation in the County.

Prior to full time consulting Christy has been the trauma program director for two Level II start up trauma centers and has focused her career on trauma since the 1980's. In addition to her trauma center work, Christy was the Regional Trauma Director in the 1990's for Northern California EMS, INC. an eleven county region. Christy's responsibilities included: Monitoring overall performance of trauma care in the counties. Ensuring delivery of quality care in two Level II Trauma Centers, and five Level III Centers. Monitoring system integration of patient care, prehospital care, and patient destination throughout the region. Preparation and submission of grant proposals to acquire funding for special projects including a prehospital care computerized data collection program, and a data program that will link prehospital, trauma, hospital discharge and traffic information into one system.

CHRISTOPH R. KAUFMANN, MD, MPH, FACS-Surgeon

Dr. Kaufmann is Associate Medical Director, Trauma Services at Legacy Emanuel Hospital in Portland, Oregon. He attended medical school at the Uniformed Services University of the Health Sciences (USUHS) in Bethesda and completed his general surgery residency at Tripler Army Medical Center, Honolulu, Hawaii. He then completed the Trauma/Critical Care Fellowship at Harborview Medical Center in Seattle. He is board certified in general surgery and surgical critical care.

In 1990, while on the teaching faculty of Madigan Army Medical Center in Tacoma, Dr. Kaufmann was deployed with the 47th Combat Support Hospital to

Saudi Arabia and Iraq. In 1993, Dr. Kaufmann was assigned to the USUHS Department of Surgery with responsibility as trauma consultant to the U.S. Public Health Service. He served as Director, Division of Trauma and Emergency Medical Systems, Health Resources and Services Administration (HRSA), where he administered the federal grant program to develop trauma care systems across the United States. He also participated as an author of the Model Trauma Care System Plan. In 1996, he returned to the Department of Surgery at USUHS as Principal Investigator of the Demonstration Project for Telepresence Surgery. He served as Chief, Division of Trauma and Combat Surgery, and Region Chief, American College of Surgeons Military Committee on Trauma. Dr. Kaufmann was the Surgical Director of the National Capital Area Medical Simulation Center and Professor of Surgery at USUHS at the time of his retirement from the U.S. Army in 2002. He is now Chair of the Advanced Trauma Life Support (ATLS) Subcommittee for the ACS Committee on Trauma.

Dr. Kaufmann is an author of the current revision of the HRSA Model Trauma Care System Plan. He has given over 100 presentations in 16 different countries. He has been a member of numerous local, state, national and international committees, both military and civilian, relating to trauma systems and trauma care, including:

Member, Trauma Systems Consultation Committee, ACS Committee on Trauma

Associate Examiner, American Board of Surgery
Executive Committee, American College of Surgeons Committee on Trauma
Site Surveyor, ACS Trauma Center Verification & Review Committee
Trauma Center Site Surveyor, Virginia, Pennsylvania, Illinois, and Washington
Member, Committee on a Vision for Space Medicine Beyond Earth Orbit, Institute of Medicine
Editorial Board, NATO Emergency War Surgery Handbook, 3rd U.S. Revision
President, Ambroise Pare Military Surgical Forum of ISS-SIC
Examiner, Society of Apothecaries of London, Diploma in the Medical Care of Catastrophes

PENNIE KLEIN, RN, MA

Ms. Klein has been working in trauma and trauma systems since the 1980's. Her trauma center experience includes roles as Trauma Coordinator at a Level II trauma center in Washington State and Trauma Service Director at an ACS Level I trauma Center in Arizona. She has served in a leadership role in trauma system development and implementation at the regional level in Washington State, and at the state level in Arizona as State Trauma System Coordinator. She has a graduate degree in Organizational Management and is currently at the Department of Health in Washington State where she is working with Washington's regional systems to enhance their capacity for strategic planning.

JON R. KROHMER, MD, FACEP-Emergency physician

Dr. Krohmer is an Associate Professor of Emergency Medicine at Michigan State University and Director of EMS of the Emergency Medicine Residency at Spectrum Health Downtown Campus in Grand Rapids. He is the former Medical Director of Kent County EMS in Grand Rapids and also past president of the Michigan College of Emergency Physicians and the National Association of EMS Physicians.

Dr. Krohmer has been involved in EMS activities for over 30 years. He is a graduate of the University of Michigan Medical School and completed an EM residency and an EMS/research fellowship at Wright State University in Dayton.

He has been very active with the American College of Emergency Physicians at the national and state levels and the National Association of EMS Physicians. He is past president of NAEMSP. He was a long member of the ACEP EMS Committee, is a Past-Chair of the committee and of the Trauma Care and Injury Control Committee. He is the 1998 recipient of the ACEP Outstanding Contribution to EMS Award and the 2003 recipient of the NAESMP Ronald Steward Award for contribution to national EMS activities. He is the ACEP and NAESMP liaison to the ACS COT and is a past president of the Michigan Trauma Coalition and has been very active in trauma systems development in Michigan.

DAN MANZ-DIRECTOR, VERMONT EMS

Dan Manz is the Director of Emergency Medical Services for the VT Department of Health. He has been in EMS for more than 25 years and worked as an EMT, volunteer squad leader, hospital communications technician, EMS regional coordinator, EMS trainer and State EMS Director. Much of his work has been in rural areas including Maine and Saudi Arabia. Dan has been active in the National Association of State EMS Directors, serving as their President for two years and representing the association in the HCFA Negotiated Rule Making process. Dan remains active as a volunteer EMT-Intermediate with the local ambulance service in his community. In his spare time he enjoys hiking, fishing and sheep farming.

TERRY MULLINS, MBA

Terry Mullins, MBA, has managed the Trauma-EMS TAC since January 2002. He has 13 years experience as a pre-hospital provider and six years of management experience in the ambulance industry. During this period, he was active in regional and statewide EMS and trauma initiatives. Mr. Mullins has an MBA from the American Graduate School of International Business Management in Glendale Arizona as well as Bachelor degrees in Foreign Languages and

Paramedicine from Seattle University and Central Washington University respectively.

NELS D. SANDDAL, MS, REMT-B

Mr. Sanddal is currently the president of the Critical Illness and Trauma Foundation, in Bozeman, Montana. CIT is a non-profit organization dedicated to improving the outcomes of people who are injured in rural America through programs of prevention, training and research. He also serves as the Director of the Rural EMS and Trauma Technical Assistance Center which is funded by the Department of Health and Human Services, Health Resources and Services Administration. He received his EMT training in Boulder, Montana, in 1973 and has been an active EMT with numerous volunteer ambulance services since that time. He currently responds with the Gallatin River Ranch Volunteer Fire Department where he serves as the Medical Officer and Assistant Chief. Nels worked as the training coordinator for the EMS and Injury Prevention Section of the Montana Department of Public Health and Human Services in the late 1970's. He has served as the Chairperson of the National Council of State EMS Training Coordinators and as the lead staff member for that organization, as well as the National Association of EMT.

He has been a co-investigator for six state or regional rural preventable trauma mortality studies and has conducted research in the area of training for prehospital and nursing personnel as well as in rural injury prevention and control. He is a core faculty member for the NHTSA Development of Trauma Systems course and has conducted several statewide EMS assessments for NHTSA.

He completed his undergraduate work at Carroll College, received his Master's degree in psychology from Montana State University and is currently completing his doctorate in Health and Human Behavior from Walden University.

Appendix B: List of CT ACS Participants

Name	Affiliation
John Kofi Abbensetts	Hartford Hospital
Address	Phone /E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-3766/ jabbens@harthosp.org
Name	Title
Stephanie Allen	Surgeon Resident
Name	Affiliation
Ellie Atkins	Hartford Hospital
Address	Phone/ E-mail
80 Seymour Street Hartford, CT 06102	(860) 545-1211 eatkins@harthosp.org
Name	Affiliation
Barbara Banda	Bristol Hospital, Inc.
Address	Phone/E-Mail
PO Box 977 Bristol, CT 06011-0977	(860) 585-3368/ bbanda@bristolhospital.org
Name	Affiliation
Deborah Lea Bandanza	Bridgeport Hospital
Address	Phone/E-Mail
267 Grant Street Bridgeport, CT 06610	(203) 384-3678 ndban@bpthosp.org
Name	Affiliation
Jon Barbagallo	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1215 jbarbag@harthosp.org

Name	Affiliation
Tom Bell	William W. Backus Hospital
Address	E-Mail
326 Washington St, Norwich, CT 06360	Tbellmd@aol.com

Name	Affiliation
Cheryl Bennett	William W. Backus Hospital
Address	Phone/E-Mail
326 Washington St, Norwich, CT 06360	860) 889-8331 x 7525/ cbennett@wwbh.org

Name	Affiliation
Charlie Bizilj	Johnson Memorial Hospital
Address	E-Mail
201 Chestnut Hill Road Stafford Springs, CT 06076	charles.bizilj@jmhosp.org

Name	Affiliation
John Bonadies	Hospital of Saint Raphael
Address	Phone/E-Mail
1450 Chapel Street New Haven, CT 06511	(203) 789-5924 jbonadies@srhs.org

Name	Affiliation
Robert Brautigam, MD	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-3766 rbrauti@harthosp.org

Name	Affiliation
Kevin Brown	OEMS
Address	Phone/E-Mail
410 Capitol Avenue, P.O. Box 340308 Hartford, Connecticut 06134-0308	(860) 509-7551 kevin.brown@po.state.ct.us

Name	Affiliation
Sandra C. Brown	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1082 sabrown@harthosp.org

Name	Affiliation
Bruce Browner, MD, MS	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1128 browner@nso.uchc.edu

Name	Title/Affiliation
Karen Buckley-Bates	Government Relations Department of Health
Address	Phone/E-Mail
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	(860) 509-7284 kmbates@po.state.ct.us

Name	Title/Affiliation
A. Calvello	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-5305 acalvel@harthosp.org

Name	Affiliation
Carla Carusone	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-3261 carla.caruson@ynhh.org

Name	Title/Affiliation
Bertie Choung, RN	Nursing Director Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-2352 chuong@ynhh.org

Name	Affiliation
Raffaella Coler	EMS Education Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-2564 rcoler@harthosp.org

Name	Affiliation
Anthony J. Coppola, MD	Lawrence and Memorial Hospital
Address	Phone/E-Mail
365 Montauk Ave New London, CT 06320-4769	(860) 442-0711 acoppola@lmhosp.chimc.org

Name	Affiliation
Christopher Dadlez	St. Francis Hospital and Medical Center
Address	
95 Woodland St Hartford, CT 06105-1299	

Name	Affiliation
Sally Dalton, RN	Bridgeport Hospital
Address	Phone/E-Mail
267 Grant Street Bridgeport, CT 06610	(203) 384-3240 nsdalt@bpthosp.org

Name	Affiliation
Tracy Evans	Norwalk Hospital
Address	Phone/E-Mail
34 Maple Street Norwalk, CT 06856	(203) 855-3990 tracey.evans@norwalkhealth.org

Name	Affiliation
Fernando Ferrer	Connecticut Children's Memorial Center
Address	Phone/E-Mail
282 Washington Street Hartford, CT 06106	(860) 545-9658 fferrer@ccmckids.org

Name	Affiliation
Andrea Foley	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-3291 andrea.foley@ynhh.org

Name	Affiliation
Barbara Fox	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-0087 bfox@harthosp.org

Name	Affiliation
Robert Galvin, MD, FACEP	Department of Health
Address	Phone/E-Mail
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	(860) 509-7101 robert.galvin@po.state.ct.us

Name	Title/Affiliation
Pam George	Sharon Hospital
Address	Phone
50 Hospital Hill Road Sharon, CT 06069	(860) 364-4141

Name	Title/Affiliation
Ronald Gross, MD, FACS	Associate Director of Trauma Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-4187 rgross@harthosp.org

Name	Affiliation
John Gustafson	CMED New Haven Emergency Communications
	Phone/E-Mail
	(203) 946-7038 cmed.nh@snet.net

Name	Affiliation
Leonard Guercia, EMT-P	Department of Health
Address	
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	

Name	Affiliation
Timothy Hall, MD, FACS	Stamford Hospital
Address	Phone/E-Mail
30 Shelburne Road Stamford, CT 06904	(203) 276-7470 thall@stamhealth.org

Name	Affiliation
Theresa Hendrickson	Connecticut Children's Memorial Center
Address	Phone/E-Mail
282 Washington Street Hartford, CT 06106	(860) 545-8559 thendri@ccmekids.org

Name	Affiliation
Nam Heui Kim, MD, FACS	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(617) 823-5078 namheui@yahoo.com

Name	Affiliation
Jim Hite	Middlesex Hospital
Address	Phone/E-Mail
28 Crescent Street Middletown, CT 06457	(860) 344-6596 jim_hite@midhosp.org

Name	Affiliation
Margie Hudson	Department of Health
Address	Phone/E-Mail
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	(860) 509-7808 margie.hudson@po.state.ct.us

Name	Affiliation
Lenworth Jacobs, MD, FACS, MPH	Hartford Hospital

Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-3112 Ljacobs@harthosp.edu
Name	Affiliation
Jean Jacobson, RN	Norwalk Hospital
Address	Phone/E-Mail
34 Maple Street Norwalk, CT 06856	(203)855-3887 jean.jacobson@norwalkhealth.org
Name	Affiliation
Scott James, RN, EMT-P	Connecticut Children's Memorial Center
Address	Phone/E-Mail
282 Washington Street Hartford, CT 06106	(860) 545-9810 sjames@ccmckids.org
Name	Affiliation
Charles Jaskiewicz	State of CT EMS Advisory Committee
	Phone/E-Mail
	(860) 889-8803 cjaskiewicz@msn.com
Name	Affiliation
Robert Kenny	Department of Health
Address	
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	
Name	Affiliation
Virginia Kristie	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1213 vkristie@harthosp.org
Name	Affiliation

Vivian Lane, MS, RN	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-0318 vlane@harthosp.org
Name	Affiliation
Kathleen LaVorgna, MD, FACS	Norwalk Hospital
Address	Phone/E-Mail
34 Maple Street Norwalk, CT 06856	(203) 845-2214 tracy.evans@norwalkhealth.org
Name	Affiliation
Tucker Leary	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-2610 leary@ynhh.org
Name	Affiliation
Marge Letitia, RN, EMT-P	ECHN (Manchester/Rockville)
	Phone/E-Mail
	(860) 646-1222 x 2312 mletitia@echn.org
Name	Affiliation
Kathy Lewis	Danburg Hospital
Address	Phone/E-Mail
24 Hospital Avenue Danbury, CT, 06810	(203) 797-7901 kathy.lewis@danhosp.org
Name	Affiliation
Melissa McKee, MD, MPH, FACS	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 785-2701 melissa.mckee@yale.edu
Name	Affiliation
Robert McKeon	SEEMS
	Phone

	(860) 822-6028
Name	Affiliation
Jacqueline McQuay, MS, RN	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1538 jmcquey@harthosp.org
Name	Affiliation
John Meehan	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-2100 meehan@harthosp.org
Name	Affiliation
Tony Morgan, MD, FACS	St. Francis Hospital and Medical Center
Address	Phone
95 Woodland St Hartford, CT 06105-1299	(860) 714-4694
Name	Affiliation
Betty Morris	NorthCentral CT EMS Council
	Phone/E-Mail
	(860) 769-6055 bmorris@northcentralctems.org
Name	Affiliation
Gillian Mosier	William W. Backus Hospital
	Phone/E-Mail
326 Washington St, Norwich, CT 06360	(860) 889-8339 x3220 gmosier@wwbh.org
Name	Affiliation
Calvin Norway	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-3289 calvin.norway@ynhh.com

Name	Affiliation
Judy O'Connor, RN	Saint Raphael Healthcare System
Address	Phone/E-Mail
1450 Chapel Street New Haven, CT 06511	(203) 530-5520 joconnor@srhs.org

Name	Affiliation
Tony Paquette	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-3889 apaquet@harthosp.org

Name	Affiliation
Jay Paretzky	CT EMS Advisory Board
Address	Phone/E-Mail
114 Woodland Street Hartford, CT 06105	(203)259-4456 ctemtsd@aol.com

Name	Affiliation
Paul Possenti, PC-C	Bridgeport Hospital
Address	E-Mail
267 Grant Street Bridgeport, CT 06610	ppposs@bpthosp.org

Name	Affiliation
Jim Paturas	Yale New Haven Hospital
Address	Phone/E-Mail
20 York Street New Haven, CT 06510	(203) 688-3224 james.paturas@ynhh.org

Name	Affiliation

Alberto Perez, MD, FACEP	Windham Hospital
Address	Phone/E-Mail
112 Mansfield Willimantic, CT 06226	(860) 208-4226 aaperez@harthsop.org
Name	Affiliation
Robert Petty	SWEMSC
	Phone/E-Mail
	(203) 255-4411 rpetty@swemsc.org
Name	Title/Affiliation
Lynn Piacentini, RN, EMT-P	Department of Health
Address	
410 Capitol Avenue, MS #13GRE Hartford, CT 06134-0308	
Name	Title/Affiliation
John Quinlavin, EMT-P	Chairperson CT EMS Advisory Board/St. Francis Hospital
Address	Phone/E-Mail
95 Woodland St Hartford, CT 06105-1299	(860) 914-5549 jquinlav@stfranciscare.org
Name	Affiliation
Kenneth J. Robinson, MD, FACEP	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-5388 krobins@harthosp.org
Name	Title/Affiliation

Jeremy Rodorigo	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1216 jrodori@harthosp.org
Name	Affiliation
Fredrick V. Rosa	Sharon Hospital EMS
Address	Phone/E-Mail
50 Hospital Hill Road Sharon, CT 06069	(860) 489-5931 medc6332@sbcglobal.net
Name	Affiliation
Jeffrey Schoff	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-1151 jschoff@harthosp.org
Name	Affiliation
John Schulz, MD, FACS	Bridgeport Hospital
Address	Phone/E-Mail
267 Grant Street Bridgeport, CT 06610	(203) 384-3890 pjschu@bpthosp.org
Name	Affiliation
Subramani Seetherama, MD	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(860) 545-5107 boomjazzy@yahoo.com
Name	Title/Affiliation
Gregory L. Shangold, MD, FACEP	Connecticut College of Emergency Physicians, Board of Directors Windham Hospital

Address	Phone/E-Mail
112 Mansfield Willimantic, CT 06226	(860)456-6745 glshangold@yahoo.com

Name	Affiliation
Stan Sheades	St. Francis Hospital and Medical Center
Address	Phone/E-Mail
114 Woodland Street Hartford, CT 06105	(860) 714-4297 ssheades@stfrancis.care.org

Name	Affiliation
Irene C. Smith, RN	CT EMS Advisory Board
	Phone/E-Mail
	(860) 646-2175 icsmith@cox.net

Name	Affiliation
Sheila Staib, RN	STMH
	Phone/E-Mail
	(203) 709-3655 sstaib@stmh.org

Name	Title/Affiliation
Marian Storch	CT Department of Health
Address	Phone/E-Mail
410 Capitol Ave MS # MAT, PO Box 340308 Hartford, CT 06134	(860) 509-7791 marian.storch@po.state.ct.us

Name	Title/Affiliation
Maria Tackett, RN	Hartford Hospital

Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	860-545-1407/mtacket@harthosp.org

Name	Title/Affiliation
Bill Teel, Ph.D	CT Department of Health
Address	**Phone/E-Mail**
410 Capitol Ave MS # MAT PO Box 340308	(860) 232-3759 bill.teel@po.state.ct.us

Name	Title/Affiliation
Jim Thornton	Connecticut Children's Memorial Center
Address	**Phone/E-Mail**
282 Washington Street Hartford, CT 06106	(860) 545-8553 jthornton@ccmckids.org

Name	Affiliation
Lynn Townshend	CT Department of Health
Address	**Phone/E-Mail**
410 Capitol Ave MS # MAT PO Box 340308	

Name	Affiliation
Bob Trefry	Bridgeport Hospital
Address	**Phone/E-Mail**
267 Grant Street Bridgeport, CT 06610	(860) 384-3478

Name	Affiliation
Richard Weiss, MD, FACS	Connecticut Children's Memorial Center
Address	**Phone/E-Mail**
282 Washington Street Hartford, CT 06106	(860) 545-9659 rweiss@cccmckids.org

Name	Affiliation
Paul J. Wentworth, EMT-P	State Paramedic Johnson Memorial Hospital/State Paramedic Committee
	Phone/E-Mail
	(860) 684-8116 paul.wentworth@jmhosp.org
Name	Affiliation
Jim Wiley, MD, FACEP	Connecticut Children's Memorial Center
Address	Phone/E-Mail
282 Washington Street Hartford, CT 06106	(860) 545-9192 jwiley@ccmckids.org
Name	Affiliation
Frieda Winnick, APRN	Hartford Hospital
Address	Phone/E-Mail
80 Seymour Street Hartford, CT 06102	(617) 545-5609 fwinnic@harthosp.org
Name	Affiliation
RN, EMT-P	St. Vincent's Medical Center
Address	Phone/E-Mail
2800 Main Street Bridgeport, CT 06606	(203) 576-5138 jwinters@stvinents.org
Name	Affiliation
Steven Wolf, MD, FACEP	Saint Francis Hospital and Medical Center
Address	Phone/E-Mail
114 Woodland Street Hartford, CT 06105	(860) 714-4701 swolf@stfranciscare.org

Name	Affiliation
Paul J. Wontworth	Johnson Memorial Hospital/Paramedic Committee
Address	Phone
201 Chestnut Hill Road Hartford, CT	(860) 684-4251
Name	Affiliation
Alan Yoder, EMT-P	SWEMSC
Address	Phone/E-Mail
	(203) 341-6081 ayoder2@bestortct.gov
Name	Affiliation
Michael Zanker, MD, FACEP	CT Department of Health
Address	
410 Captial Ave MS # MAT, PO Box 340308	