

**STATE OF CONNECTICUT**

**AN ASSESSMENT**

**OF**

**EMERGENCY MEDICAL SERVICES**

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National Highway Traffic  
Safety Administration  
Technical Assistance Team

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## BACKGROUND

Injury is the leading cause of death for persons in the age group 1 through 44. Each year nearly 40,000 people lose their lives on our nation's roads, and approximately 70 percent of those fatalities occur on rural highways. The National Highway Traffic Safety Administration (NHTSA) is charged with reducing accidental injury on the nation's highways. NHTSA has determined that it can best use its limited resources if its efforts are focused on assisting States with the development of integrated emergency medical services programs that include comprehensive systems of trauma care.

To accomplish this goal, NHTSA has developed a Technical Assistance Team approach that permits States to utilize highway safety funds to support the technical evaluation of existing and proposed emergency medical services programs. NHTSA serves as a facilitator by assembling a team of technical experts who have demonstrated expertise in emergency medical services development and implementation. These experts have demonstrated leadership and expertise through involvement in national organizations committed to the improvement of emergency medical services throughout the country. Selection to the Technical Assistance Team (TAT) is also based on experience in special areas identified by the requesting State. Examples of specialized expertise include experience in the development of legislative proposals, data gathering systems, and trauma systems. Experience in similar geographic and demographic situations, such as rural, mountainous areas, coupled with knowledge in providing emergency medical services in urban populations is essential.

The Connecticut Department of Transportation, Bureau of Highways, Office of Highway Safety, in concert with the Connecticut Department of Health Services, Office of Emergency Medical Services requested the assistance of NHTSA. NHTSA agreed to utilize its technical assistance program to provide a technical evaluation of the Connecticut statewide EMS Program. NHTSA developed a format whereby the Connecticut Office of Emergency Medical Services provided comprehensive briefings on the EMS system based on an outline developed by the Technical Assistance Team.



## **ACKNOWLEDGMENTS**

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Special recognition should be made regarding the extraordinary efforts taken by Paul Connelly, Acting Director, Office of Emergency Medical Services and his staff, and the briefing participants for their well prepared and forthright presentations.





## INTRODUCTION

Connecticut is a unique state in many respects. Its small geographic size and a relative wealth of medical resources would seemingly make the delivery of Emergency Medical Services easy. However, when one takes into account the disparity of its population distribution between the central corridor and the outlying rural areas, as well as the political climate, lack of county government and town structure, the problems become more complex. With other sociodemographic and epidemiologic characteristics such as a relatively low incident rate of motor vehicle crashes, an increasing rate of violent crime related to the illegal drug trade, and an alarmingly high rate of communicable diseases the challenge is further exacerbated.

The Office of Emergency Medical Services (OEMS) has attempted to respond to the unique needs of the citizens of Connecticut relative to the availability and delivery of emergency medical services. During the period of federal categorical grant funding, many components of a comprehensive system were established. Some of these efforts are clearly apparent today. Others have become significantly less effective due to the associated decrease in fiscal resources and still others have disappeared entirely. OEMS is currently faced with the challenge of re-evaluating its statewide EMS plan, identifying the resources available and necessary to complete that plan, and charting a clear and decisive course of action to meet those identified goals and objectives.

In this era when medical cost containment and governmental fiscal prudence are the watchwords, each and every component of the system must be thoroughly evaluated to ensure that decisions are based on patient care needs and not on outdated notions or traditions. Such a system of care can only be predicated on the availability of clear and consistent data which identify epidemiological concerns, EMS interventions, and patient outcomes. The data collection system must allow and encourage the ongoing monitoring and refinement of the system throughout all of the phases of care from prevention to rehabilitation.

The dedication of the OEMS staff is apparent as are the efforts of many other personnel currently involved in EMS across the State. That commitment must be refocused toward clear and definable goals and must be channeled by decisive, proactive leadership. Local, regional and state personnel must form a partnership to actively build coalitions and strengthen existing relationships to improve EMS in Connecticut. Parochial concerns must be put aside for the benefit of all the citizens in Connecticut.



## Connecticut Emergency Medical Services (EMS)

The Technical Assistance Team (TAT) reviewed ten essential components of an EMS system. For each component reviewed, the Technical Assistance Team identified key EMS issues or standards, assessed the status, and made recommendations for necessary changes.

### A. REGULATION AND POLICY

#### Standard

To provide a quality, effective system of emergency medical care, each EMS system must have in place comprehensive enabling legislation with provision for a lead EMS agency, as well as a funding mechanism, regulations, and operational policies and procedures.

#### Status

The State of Connecticut has adopted comprehensive EMS legislation. The strength of this legislation is found in its identification of a State Lead EMS Agency; certification, licensure and investigation of ambulance and rescue vehicles; regional council participation in EMS activities; and statewide rate setting for emergency transport services. The statute allows for the development of regulations governing the planning and implementation of EMS throughout the continuum of care. While the TAT recognizes the comprehensiveness of the current statutes it also recognizes that the current statutes have not been fully implemented or adequately evaluated. For example, there is a requirement to annually inventory EMS resources within the State including facilities, equipment, and personnel yet there does not appear to be a standardized compliance methodology statewide to accomplish this task. Further, there is a requirement to develop a data collection system and uniform patient record that at a minimum follows the patient through the emergency department. Again, while a statewide run report has been developed; its use in the system is variable and the consistency or accuracy of any data reporting requirements is lacking.

While the current statutes are comprehensive, there are clearly some areas that, as currently instituted, need greater emphasis, restructuring, or development. In this regard the most important area of concern is the need to define the roles and responsibilities of the State Medical Director, and the authority for trauma system development and implementation. A concern exists regarding the status of the EMS agency within the Health Department, the role and responsibility of the regional councils, and the elimination of a State EMS Advisory Committee.

The TAT found only one set of EMS regulations. These regulations were adopted in 1988 and address a broad-based set of EMS system components ranging from licensure, certification and investigation of EMS provider agencies to the release of care to physicians on scene. The system for regulatory development and implementation could not be clearly articulated by system participants. At the very least the system to develop regulations appeared confusing, not clearly understood, and cumbersome to the point that it may take years for regulations to get to the point of adoption and implementation. Information presented indicated a strong avoidance of this system because of the problems cited above.

### Recommendations

- ◆ ***Streamline the regulatory process. This process should take no longer than six months once community input is received and the first draft set of regulations is sent for comment.***
- ◆ Develop regulations for each recognized EMS component within the statute. Separate education, training, and certification of personnel from licensure of vehicles and requirements for approval of transport agencies. Each component of the EMS system should have its own set of regulations to define the parameters, set the standards and stipulate methods of evaluation.
- ◆ For each set of regulations a consistent and statewide set of policies, procedures and protocols should be developed. These should be instituted at the state level and be monitored locally as well as on a statewide basis.
- ◆ Reconstitute a statewide advisory body that has representation from local and regional providers, hospitals, physician specialty groups including but not limited to emergency medicine, surgery, and medical control physicians.
- ◆ ***Obtain Department of Health Services Agency authority for a State Medical Advisory Committee. Formalize the process for medical input and evaluation.***
- ◆ Review the status of the EMS agency within the Health Department. Consider giving the EMS agency Deputy Director status within the Health Department hierarchy so that its importance in the State is clearly articulated.

- ◆ ***Reinstate the position of EMS Director. The importance of strong leadership at the state level cannot be overstated. Without direction from the state agency the ability to improve or enhance service may never be realized.***
- ◆ Consider reformatting the roles and responsibilities of regional agencies. Given the size and population of the State of Connecticut, regions should be part of the state agency. Whether this is accomplished through state employees or through contract is not material but clearly the regions should be a part of, and report to, the state lead EMS agency. They should be redefined so that they match patient flow and population patterns throughout the State. The TAT felt that, at a maximum, three regions could adequately serve the area. It is recognized that this may not be a popular position but given that many services currently provided by the regions could easily be done by the State; the need to better utilize resources within the State exists.
- ◆ ***The development and implementation of a statewide system of trauma care is a necessity if victims of traumatic emergencies are going to be assured access to trauma level care. This should be a priority at the state level.***

## Lead Agency

The role of the lead agency is clearly defined in the statutes. However, the most important role of the state lead EMS agency cannot be spelled out in law--*that is the responsibility to lead*. Someone must be responsible, with authority to institute change, to develop and implement standards and ensure the integration of all service delivery systems. In this way service delivery systems can be enhanced and provide for the health and safety of the visitors and residents within the State when an emergency medical event occurs. In order to carry out these functions, elected officials at all levels of government must see EMS as the third essential service and ensure sufficient resources and funding to carry out the development and implementation of a statewide EMS system.

At the state level, the state lead EMS agency must assume its role of leadership in the areas of vehicle licensure and certification; certification of emergency personnel; training program approval and instructor certification; data collection and evaluation; public information and education; administrative services in the form of budgets, contracts for services, personnel, planning, and medical disaster services. The building of coalitions, and advisory committees to assist in planning is a state lead EMS agency requirement. Currently the state lead EMS agency has assumed a role in many of these programmatic areas but has not commanded the leadership through the regulatory process to provide and maintain services or to improve and enhance services throughout the State. The State Advisory Committee has disbanded because of a lack of interest. This is an example of the deterioration of state leadership as further evidenced by the lack of a state director for over two years, the elimination of vehicle inspector positions within the Office of EMS, and the inability to evaluate the current system through a statewide data collection system. Inherent in its role of lead agency is the need to establish standards of care for all levels of services providers, training agencies and others involved in the delivery of EMS. Based on the strong belief of the TAT on the importance of the lead agency responsibilities, the TAT has identified areas of service delivery and system management that should be clearly retained and enhanced at the state level. In addition to the roles stated above, the state lead EMS agency should assume the responsibility for evaluation of provider services; including personnel, equipment, and service area perimeters. The role of regional councils should be to act as the facilitator to carry out state mandates.

Adequate funding for the state OEMS is essential. This funding should not be totally reliant on general funds but should be supplemented with specific dedicated funding for EMS statewide activities. A number of models for system financing have been successful in other states. These systems should be evaluated by the state and their EMS constituencies to determine the most effective additional EMS funding strategy. At a minimum, consideration of licensure and certification fees for providers and EMT personnel, assessments on moving vehicle violations, vehicle registration, or 911 rate setting systems should be explored. For example, the current communication system is threatened with dissolution because of decreased funding provided by towns or municipalities. Could a system be established to increase the 911 fee? The increased funding could be directly applied to the EMS communication system at all levels (administration, dispatch, call screening, etc.). This implies and would be reliant on a communication system with standards, policies, procedures, protocols, a statewide system and plan. This methodology allows for system maintenance, system improvement and system enhancement as technology changes. Again, this is but an example of one way to consider funding a portion of EMS essential service activities.

The role of a lead EMS agency has clearly changed over time. The opportunity is present in the State of Connecticut to recreate a statewide model system. A committed contingency is present, the mechanisms now need to be put in place.

#### Recommendations

- ◆ ***Recruit an experienced EMS director at the state level at a salary commensurate with the scope of responsibility and statutory mandates.***
- ◆ Consider reorganization of existing personnel to meet statutory requirements.
- ◆ Institute an EMS advisory committee to assist the director in carrying out the responsibilities of planning, developing, and implementing an effective EMS system.
- ◆ Ensure compliance with current statutes.
- ◆ Provide for additional staff resources in the areas of public information and education, and data collection and evaluation.
- ◆ Increase time allocation of MIC nurse coordinator to a full-time equivalent, clearly define their function and line responsibility.

- ◆ ***Clearly define the role of the State Medical Director by giving specific authority and responsibilities for system standards and evaluation.***
- ◆ Ensure that all appropriate sources of funding, e.g., federal and private grants, are solicited.
- ◆ ***Fund the lead agency at a level sufficient to provide for mandated activities.***
- ◆ Evaluate different funding methodologies including sin taxes, surcharges on motor vehicle registration (\$1 for life), assessments to moving vehicle violations, etc.
- ◆ Adopt additional methods of funding and work to implement within one year.



## B. RESOURCE MANAGEMENT

### Standard

The provision of centralized coordination to identify and categorize the resources necessary for overall system implementation and operation is essential to an effective EMS system. This is required to maintain a coordinated response and appropriate resource utilization throughout the State. It is essential that victims of medical or traumatic emergencies have equal access to basic emergency care, including the triage and transport of all victims by appropriately certified personnel (at a minimum, trained to the EMT-Basic level) in a licensed and equipped ambulance to a facility that is appropriately equipped and staffed, and ready to administer to the needs of the patient.

### Status

The State of Connecticut has appropriate authority to fully coordinate and manage the resources available to its EMS program. The State is rich in terms of resources considering its population base, state geographic area, availability of EMS committed professionals and all other EMS support personnel. Also noted as resource strengths are progressive hospital facilities. In addition, Connecticut has a documented history of caring as evidenced by the vast coverage of its volunteer forces.

At the state OEMS level the licensure function, as it relates to ambulance provider authorities, ambulance vehicles, associated and required equipment, appropriate attending personnel, and compliance is superbly met. The program is effective in ensuring Connecticut citizens have access to qualified EMS providers as compared to existing national standards. Methodology and process exist for communities and EMS providers which allows for progression from basic life support (BLS) levels through advanced life support (ALS) levels. Additionally, the willingness and availability of hospital facilities and emergency room staff, particularly emergency physicians and nurses, to support local EMS program development is apparent. The 24-hour emergency room coverage statewide by a high percentage of Board eligible/certified emergency physicians (approximately 70%) is a prime example. Two hospitals have voluntarily solicited and achieved American College of Surgeons (ACS) verification at Level I. This clearly demonstrates a commitment by these two facilities to the disease of trauma. The existence of a statewide poison control center, the nation's first to be enacted by state statutes, further exemplifies the outstanding resources available. Also, recognized by the TAT is the State's citizen access (911) program and the State's significantly developed communications system.

Conversely, this authority is not being used to its fullest capability by the EMS lead agency -- the Office of EMS within the Connecticut Department of Health Services. Although the charge clearly exists for statewide coordination and management of EMS resources through development of a comprehensive state EMS plan, the integration and coordination of resources does not currently exist. As a result, there seems to be no clear state level program direction for use of available resources.

While OEMS knows where ambulance vehicles and personnel are located, no evidence exists that supports placement based on patient needs versus political boundaries. No standards exist for BLS/ALS use which are based on patient needs. There is no statewide data base or evaluation mechanism available for use in determining whether resources are adequately and properly utilized.

OEMS has not inventoried facility capabilities, such as burn, spinal, neonatal and has not planned for sub-specialty utilization. In addition, transport systems for special populations other than the helicopter (LifeStar) system have not been inventoried.

There is also strong evidence of EMS system fragmentation and duplication by uncoordinated regional EMS programs. The five regions are inconsistent with regard to program planning, operations, and evaluation. Grassroots support obtained by regional programs is not funneled into a well planned statewide EMS program but unfortunately is often used to usurp the lead agency's authority. Recent budget conflicts are cited.

#### Recommendations

- ◆ *Develop a comprehensive state EMS plan to serve as a basis for work performed by OEMS, regional councils, and all other EMS support groups and organizations. The plan should represent a statewide consensus of EMS program directives.*
- ◆ *Develop a coordinated statewide data collection and evaluation system that can properly monitor the EMS system, the utilization of EMS resources which identifies gaps in the EMS system and can serve to justify and measure efforts to correct same, and which provides for full integration and coordination of available resources into the updated state plan.*

## C. MANPOWER AND TRAINING

### Standard

EMS personnel can perform their mission only if adequately trained and available in sufficient numbers throughout the State. Each prehospital training program should use a standardized curriculum for each level of EMT personnel. In an effective EMS system, training programs are routinely monitored, instructors must meet certain requirements, and the curriculum is standardized throughout the State. In addition, the state agency must provide a comprehensive plan for stable and consistent EMS training programs with effective local and regional support.

### Status

The training and certification of prehospital personnel is clearly an area of ongoing emphasis in the OEMS as witnessed by the personnel and fiscal resource allocations to this area. The OEMS is to be commended for the use of, with some modifications, National Standard Curricula as developed by the U.S. Department of Transportation as the basis for training of Medical Response Technicians (First Responders), Emergency Medical Technicians, EMT-Intermediate and EMT-Paramedics. However, some problems exist in educational course presentation and in the standardization of personnel capabilities at these levels. Clear examples are evidenced by this lack of standardization. These include: the ability to become certified as an Emergency Response Technician by completing an Advanced First Aid and Emergency Care Course with the addition of an approved CPR course and predicated upon the candidate's ability to successfully complete a written and practical exam administered by OEMS; the allowance for a challenge process at the basic EMT level for Senior National Ski Patrollers; and the "enhancement" of basic EMT personnel into areas of invasive therapy, including esophageal intubation and intravenous applications without an established patient need and with little or no standardization between regions or even programs within the same region. This variability results in inconsistent training for prehospital personnel.

The numbers of prehospital personnel appear to be adequate, particularly at the basic life support level (MRT and EMT). Although no data exist relative to the level of active participation of prehospital personnel who have been trained, data relative to the distribution and availability of such personnel in all areas of the State were not apparent to the assessment team. Likewise, the reported increase in total numbers certified during the previous year was not compared to the attrition rate so it is unclear as to whether there is a net gain in personnel over the period. Shortages of ALS personnel, particularly at the EMT-Paramedic level, were noted in some of the more remote localities.

The effort by the OEMS to increase the utilization of post-secondary institutions, specifically the vocational technical educational system, in the delivery of EMS training programs is commendable. Efforts should continue to enhance and expand this delivery mechanism, particularly at the advanced life support levels so long as such efforts do not hamper access to training from the more rural areas of the State.

The variability evident between approved ALS training programs is problematic. There are significant differences in requirements for preceptorship, clinical rotations and performance evaluation. ALS programs conducted outside of post-secondary institutions may have less consistency in applying educational technology. The training, certification, and recertification of Emergency Medical Services Instructors was viewed as a positive attribute. It is likewise commendable that the costs for the administration of such a program are being shared by the surrounding New England states.

The certification process was perceived to be strong at the EMT level with the administration/proctoring of both a standardized written and practical examination. The process was viewed as less desirable at the ALS levels with a high reliance on the written evaluation instrument to ascertain proficiency since the practical skill and performance competency issues are handled at the discretion of the local training facility and medical control system. There are no procedure/skill check lists nor protocols apparent to the TAT which would ensure similar evaluations between and among ALS training programs.

The process and procedure for recertification at all levels was seen to be an overall weakness due to the fact that continuing education hours were relatively low, and, likewise, that the local institution, agency, or medical director ultimately determines continuing competency against no apparent set standard of practice. While some efforts are underway at regional levels to negate the potentially deleterious effects of inbred training, the likelihood that providers are recertified based on manpower needs rather than medical competency exists. The increase in the length of the certification period for basic EMT beginning the seventh year to a period of three years was seen as capricious and of apparently limited value in the long term maintenance of personnel.

The availability of specialty training from the State Fire School in the areas of Hazardous Materials, Incident Command Operations, Extrication and other areas was seen as positive and participation in such training should be encouraged to the greatest degree possible. The availability of specialty training programs for personnel at all levels such as: Advanced Cardiac Life Support, Advanced Trauma Life Support, Prehospital Trauma Life Support, Pediatric Advanced Life Support, Certified Emergency Nurse, etc., was unclear and not an integrated component of the continuing education scheme.

Seemingly little emphasis is placed on the training of personnel within the system other than prehospital care providers, such as physicians and nurses. The application of programs like Emergency Medical Services Dispatcher, and citizen training programs do occur in some portions of the State. Particularly concerning Emergency Medical Services Dispatcher, the customization and refinement of caller pre-arrival instructions for each locality seems to be incomplete.

Currently a combination of a certified MRT in tandem with a certified basic EMT can provide emergency care in an ambulance so long as the EMT is riding in the patient compartment. It is unclear that this allowance significantly increases the availability of manpower in the rural portions of the State. Likewise, a bridge program designed to build on the existing level of knowledge and skill of a certified MRT so that they can progress to the level of an EMT is currently in a pilot testing phase.

### Recommendations

- ◆ *Provide institutional program approval for training at the EMT-Intermediate and EMT-Paramedic levels. While the emphasis of EMS-I availability and approval may be appropriate at the basic EMT level; at the ALS levels, there are components of significantly greater importance which should be considered. All advanced levels should be located in approved post-secondary educational institutions. Program certification should be based on institutional capabilities rather than individual EMS-Is.*
- ◆ *Adopt a standard of two basic EMTs as the minimum personnel to provide service on a certified or licensed ambulance. Additionally, require a driving course to be completed during the first two-year certification.*
- ◆ Improve the process for recertification of all personnel to include both continuing medical education and a mechanism to establish continuing knowledge and performance capabilities. Eliminate the three year recertification period for those with extended service periods.
- ◆ Provide for an independent evaluation of MRT/EMT bridge program to determine its effectiveness in upgrading personnel.
- ◆ Continue and potentially increase the number of MRTs serving in non-transport capacities, such as law enforcement and fire services. Consider requiring all law enforcement and fire services personnel to maintain training at the MRT level. Develop and implement methods for ongoing continuing education and recertification of MRT personnel.

- ◆ Ensure the availability of specialty training programs for all personnel including citizens, dispatch, prehospital, and hospital. Of particular concern is the need to include medical oversight in the development of Emergency Medical Services Dispatcher pre-arrival procedures and protocols.
- ◆ *Immediately adopt certification levels or eliminate the practice of invasive techniques by non-certified personnel.*
- ◆ *Develop a process by which curricula and commensurate certification levels can be upgraded on a consistent and standardized basis statewide based upon specifically identified patient needs consistent with current medical practice. This would include programs which currently fall into the gray zone of enhanced programs, such as, EMT-D, PASG and EOA.*

## D. TRANSPORTATION

### Standard

Safe, reliable ambulance transportation is a critical component of an effective EMS system. Most patients can be effectively transported in a ground ambulance staffed by qualified emergency medical personnel. Other patients with more serious injuries or illnesses, particularly in remote areas, require rapid transportation provided by rotorcraft or fixed wing air medical services. Routine, standardized methods for inspection and licensing of all emergency medical transport vehicles is essential to maintain a constant state of readiness throughout the State.

### Status

Transportation is an essential component of an EMS system. Currently within the State, the EMS agency has a method of inspecting and licensing/ certifying each ambulance and ambulance agency in the State. Further the State has the ability to do announced and unannounced site visits of provider agencies, suspension, revocation of licensure status, and investigate complaints of either the service provider or the individual EMTs. The helicopter service provided by Hartford Hospital is available statewide based on triage policies adopted by the hospital. While the components mentioned above are strengths within the EMS system, there are a number of transportation issues that remain unresolved.

There is no consistent destination criteria for ambulance providers. The choice of hospitals is based on patient request or nearest facility rather than on patient needs. There does not appear to be a system status plan for ambulance placement or unit location. Location of service providers is based on municipal concerns rather than service demands. Perhaps the single most perplexing issue is the lack of any competitive process among ambulance providers. There have been no new services in the State in over ten years. While there is a certificate of need process, it appears to discourage the development of new and improved services. With fixed providers and little or no encouragement in the development of new service providers, there is the potential at least to lack incentives to upgrade service delivery, particularly in light of current budget constraints. System effectiveness may be compromised by the restraint of a competitive process for ambulance services. There needs to be an encouragement at the state, regional, and local level to compete for service amongst all eligible providers in the ambulance industry. This attempts to ensure the highest level service at the most affordable price. Exclusive zones or primary service areas should not be enacted without a process to determine the best and most reliable service available.

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## Recommendations

- ◆ *Maintain vehicle inspector personnel sufficient to ensure that the current minimum requirements for annual inspections are retained and to allow for the maintenance of unannounced site visits.*
- ◆ *Review certificate of need limitations as applied to limiting competitive practices among and between ambulance service providers and municipalities.*
- ◆ *Develop and implement a patient transportation and destination plan based on patient needs and patient referral patterns without considerations to political subdivisions.*
- ◆ Encourage the development of new ambulance providers within the State.
- ◆ Expand ALS service providers based on pre-established standards for ALS services giving consideration to call volume sufficient to maintain skills, while avoiding the burn-out/rust-out phenomenon.
- ◆ Revisit the issue of municipalities and volunteers providing non-emergency transport services with the ability to charge a fee. Given the limitation of commercial service, this restriction may place an unfair hardship on some service providers.



## E. FACILITIES

### Standard

It is imperative that the seriously ill patient be delivered in a timely manner to the closest appropriate facility. This determination needs to consider both stabilization and definitive care. This determination should be free of political considerations and requires that the capabilities of the facilities are clearly understood by prehospital personnel. Hospital resource capabilities must be known in advance so that appropriate primary and secondary transport decisions can be made.

### Status

There are 35 general acute care hospitals in the State. In addition, there are at least three satellite emergency care facilities in Region III which have no inpatient care capabilities.

Currently, there appears to be adequate information to assess distribution, bed capacity and bed type (i.e., ICU, pediatric, rehabilitation, etc.). There is limited information, if any, as to the capabilities of these hospitals to function appropriately and efficiently as an integrated component of an EMS/Trauma system. Two hospitals have been verified as Level I trauma centers by the ACS-COT verification process. Several other hospitals have expressed interest in being evaluated, but the level of care they wish to provide and to be evaluated for is unclear and apparently unrelated to regional, state or patient care needs. An independent process for identification of hospitals capable of receiving patients transported by rotorcraft exists and is recognized by the State. Ten such hospitals exist; however, only two hospitals actually receive such patients regularly. This identification process seems to be limited to evaluation of FAA requirements and does not involve quality patient care capabilities.

There is limited information on facility manpower, (doctors, nurses, ancillary staff) equipment, actual function (time to open an OR, etc.) or ability to care for or initially stabilize trauma and specialty patient populations (such as burns, pediatrics, and spinal cord injury). Availability of such information prior to the proposed ACS evaluation might facilitate coordinated decisions on the need and level for such evaluation. It is reported that all hospitals with emergency departments are staffed 24 hours a day with an Emergency Physician, 70% of whom are reportedly Board eligible or certified in emergency medicine. It is also not known how many Emergency Physicians have current ATLS/ACLS certification or whether hospitals routinely require this of physician and nursing staff. Virtually all hospitals are reported to be "sponsor" hospitals for prehospital providers. The role, responsibilities and accountability of these sponsor hospitals varies widely throughout the State.

There is no current information on rehabilitation services/facilities which categorizes their capability to care for multiple trauma and specialty patients, nor is there any perceived attempt to do so. This is essential to assess and plan a true system which considers all phases of care from injury through rehabilitation.

Field triage and interhospital transfer protocols are variable. There are no statewide minimum standards which are uniformly adhered to at this time. The exception here seems to be for helicopter transport, but even these criteria are not always employed consistently. In some cases, decisions as to interhospital transfer may be related to financial factors.

In summary, some information regarding facilities and their ability to function as part of a coordinated state system exists. Much more information on a broader scale is needed. Attempts to obtain such information prior to formulating a plan and initiating a trauma center identification process should be considered.

### Recommendations

- ◆ ***Evaluate all acute care hospitals and categorize according to their capability to provide the appropriate level of care to the appropriate type patient.***
- ◆ Include satellite emergency facilities in the evaluation and categorization process. A decision as to the status, capabilities, and involvement of such facilities must be made.
- ◆ Implement this categorization process prior to a trauma center identification process so that a plan based on appropriate use and distribution of resources can be formulated.
- ◆ ***Trauma centers at all levels must be designated by the lead agency, OEMS. This should involve a contractual agreement with the agency to consistently provide the level of care for which the facility is designated.***
- ◆ Formulate a process of de-designation based on criteria other than consumer complaint. Institute a schedule for periodic facility review to assure compliance with contractual obligations.
- ◆ ***Develop state standards for triage, transfer, and treatment of specialty patients to appropriate facilities (burns, pediatric, neonate, spinal cord).***

- ◆ Undertake a categorization of rehabilitation facilities and services. Based on this resource assessment, standardize triage and transfer protocols from acute care facilities and incorporate them into the system plan.
- ◆ Consider a cost/reimbursement assessment using currently available financial data to evaluate the impact of trauma care on hospitals and the system.
- ◆ Undertake a resource assessment of manpower (general surgeons, orthopedists, neurosurgeons, ED and ICU nurses) to better evaluate distribution, training, and commitment to the proposed state system.

## F. COMMUNICATION

### Standard

An effective communications subsystem is an essential component of an overall EMS system. Beginning with a universal system access number, such as 911, the communications network should provide for prioritized dispatch, dispatch to ambulance communication, ambulance to ambulance, ambulance to hospital, and hospital to hospital communications to ensure the receiving facility is ready and able to accept the patient.

### Status

Connecticut is the third state to implement a statewide enhanced 911 emergency telephone system. This most advanced access system is available to all 169 cities and towns within the State. The installation of the system throughout Connecticut meets a major goal common to all state EMS programs -- system access. Boasting financial stability for the system through a three-layered approach (state, municipality, and rate payor), the State of Connecticut, its EMS program, and supporters clearly stand above the majority in achieving this basic EMS program objective.

The prehospital emergency response system and hospital emergency facilities are linked via a UHF medical radio system. The communications system is based on the utilization of the 10 UHF medical frequencies provided by the Federal Communications Commission. The OEMS publishes and distributes a formal UHF directory that provides information regarding frequencies, access tones, and appropriate communications contacts. An additional VHF system (155 Mhz) links all CMEDS and sufficiently functions as a needed communications system for ambulances traveling throughout the State. Termed MEDNET by OEMS, this system also serves as a valuable resource for mass casualty and disaster response as well as patient triaging to hospital facilities throughout Connecticut.

The system is augmented by 13 communications centers (CMEDS). These established CMEDS provide a credible effort toward statewide and region-wide communications coordination. Some CMEDS provide pre-arrival instructions to incoming callers for various levels of emergency assistance. It is also noted and applauded by TAT members that all 911 telecommunicators are trained and state certified as a result of recent statutory mandates. Training for these telecommunicators is based on existing DOT dispatcher training standards.

Additionally, the State's EMS communications system has an additional resource in the form of a limited number of highway call boxes.

The State's PI&E program regarding 911 is also considered by the TAT to be adequate.

Some problems were noted by the TAT. These include the following:

- OEMS has not developed a state communications plan; even the consolidation of regional CMED plans is non-existent.
- The existing 13 CMEDS are virtually uncoordinated by OEMS and appear independent of the State. On the regional level, CMEDS are not associated and do not interact with regard to organization, operational procedures, and coverages with the system responders. In short, there is not commonality in services provided by the organizations. As stated during testimony, CMEDS do not coordinate all "in-area" communications. Local dispatch does exist independent of CMEDS.
- Within the State, there is not consistent sharing of communications information regarding issues like EMS component use, such as, number of calls, by what company, purpose, and delivery.
- CMEDS do not universally track system utilization i.e., vehicle availability, nor is that information shared among providers and other dispatch control points.
- Related to dispatch, the TAT cites the need to question the process currently used to determine medical necessity by the first responding unit on scene. Likewise, the turnaround (not needed) process is unclear.
- Finally, it must be noted that a considerable amount of Connecticut's communication hardware is aging. There is no evidence that OEMS has planned for appropriations needed for system upgrades or replacement.

#### Recommendations

- ◆ *Develop a state communications plan that considers all existing communications technologies, including UHF, VHF, cellular, and 800 trunking. As part of the planning process, review the need for the current number of CMEDS.*
- ◆ *Provide for statewide coordination of CMEDS with accompanying standards for operational procedures, reporting, and evaluation.*
- ◆ *Immediately begin to review the age of radio system components and research alternatives for system upgrade and/or replacement.*

## G. EVALUATION

### Standard

A comprehensive evaluation program is needed to effectively plan and implement a statewide EMS system. Each EMS system must be responsible for evaluating the effectiveness of services provided victims of medical or trauma related emergencies. The statewide EMS system should be able to state definitively what impact has been made on the patients served by the system. EMS system managers must be able to evaluate resource utilization, scope of service, patient outcome, and the effectiveness of operational policies, procedures, and protocols. An effective EMS system evaluates itself against pre-established standards and objectives so that improvements in service, particularly direct patient care, can occur. These requirements are part of an ongoing quality assurance (QA) system to review system performance. The evaluation process should be educational and ongoing. QA reviews should occur at all phases of EMS system management so that needed policy changes or treatment protocol revisions can be made.

### Status

The Department of Health, in accordance with its responsibility to develop a "data collection system," has developed and distributed a state EMS run form, as well as a list of minimum data that is to be collected by each EMS service and maintained for at least seven years. It appears that the run record is not widely used. Although most of the prescribed data is collected, there is no uniform use of these important data by the state or regions. Each EMS service, in cooperation with its sponsoring hospital, determines which run form it will use and what additional data beyond the minimum data set it chooses to collect. These multiple forms are inter- and intra-regionally incompatible, making it difficult to use these forms to collect and evaluate data on EMS system performance.

Most data collection for the evaluation of EMS service and individual provider performance is done at the local level by the sponsor hospital, with all cost for this process underwritten by the hospital. System evaluation efforts are limited by the resources available to the EMS coordinators at the hospitals, the limited exchange of information with other sponsoring hospitals in the same area, and the possibility of poor cooperation by EMT basic squads that lack a clearly defined relationship with a sponsoring hospital. Many of the sponsoring hospitals collect a significant amount of data from the services they sponsor. However, these data may not give a complete picture of EMS in the region since there is no requirement for other sponsoring hospitals in the same community to pool the available data. Until all data related to the provision of prehospital, emergency, and specialty care with outcome results are collected and evaluated in a meaningful way, it will be impossible to determine the effectiveness of the system and to develop an effective Quality Assurance (QA) program.

In order to develop an effective evaluation process for EMS quality assurance, it is necessary to develop a set of standards by which system providers are expected to perform. Some of these standards are in place such as treatment protocols, but these documents are developed by individual hospitals for their sponsored services. These local standards are not much help as a basis from which to evaluate overall regional or statewide system performance. There are no uniformly acceptable statewide EMS and trauma system policy, procedures, and protocols.

Much of concurrent quality assurance is conducted by on-line medical direction. This is most effective when the patient is delivered to the hospital providing the on-line direction and there is an opportunity to give direct and immediate feed back. On-line medical control as a quality assurance mechanism loses much of its effectiveness if the ALS provider takes the patient to a different hospital or the transporting service is a basic provider and does not have to contact the hospital at all.

There appears to be some retrospective quality assurance activity with audits of specific problems as well as periodic run reviews that involve the provider of services with a sponsorship relationship to the hospital. Again this is a sporadic process conducted by the sponsoring hospital. There is no guarantee that the process will lead to modifications in provider behavior, changes in the treatment protocols, improvement in the educational process, or more importantly impact patient outcome.

## Recommendations

- ◆ *The OEMS must develop a statewide EMS plan that reflects the standards of care to be provided. This includes protocols, policies, and procedures.*
- ◆ *Develop a standard recordkeeping system that contains the minimum data set necessary to measure compliance with these standards.*
- ◆ Mandate the use of a state standard prehospital patient record.
- ◆ Collect and integrate dispatch data.
- ◆ Collect and integrate patient outcome data with prehospital, emergency, hospital and trauma data.
- ◆ *Develop a process to input available data into a computer for analysis. Evaluate the collected data. Make available sufficient funds to support this service.*
- ◆ Identify personnel to evaluate the collected data and determine when deviations from the standards have occurred and the cause for the deviation.
- ◆ Use results of data evaluation to make needed changes in policy, procedures, and protocols. Modify the continuing education process as dictated by outcome data.



## H. PUBLIC INFORMATION AND EDUCATION

### Standard

Public awareness and education about the EMS system is essential to a quality system and is often neglected. Public information and education efforts must serve to enhance the public's role in the system, its ability to access the system, and the prevention of injuries. In many areas, EMS personnel provide system access information and present injury prevention programs which ultimately lead to better utilization of EMS resources and improved patient outcome.

### Status

The OEMS is statutorily mandated to develop a public information and education program and has obviously worked to address that charge. Likewise the regional entities and staff have tackled this process with varying degrees of enthusiasm.

Of commendable note is a public attitude and awareness survey which was conducted by telephone from randomly selected telephone numbers. While it may be impractical to design specific strategies around a limited size sample, it does provide some general information on public perceptions regarding the EMS system in the State. Of some concern is the fact that the majority of those surveyed would not activate the EMS system for a variety of presenting injuries/illnesses. It was also noted that the more the individuals knew about the EMS system, the more highly they rated the system in their community.

Based partially on the results of this current survey effort and combined with previous surveys of ambulance companies and EMTs, a variety of information has been developed and distributed by OEMS and the regions. These efforts have included the distribution of newsletters and technical bulletins, customized versions of the popular "Don't Guess, Call EMS" brochures, coloring books for younger audiences, recruitment pamphlets and infectious disease control information. The statewide availability of E-911 is well publicized in a variety of methods including the prominent display on the inside cover of every phone book.

There appears to be a lack of consistent and planned cooperation and coordination in delivering the PI&E message. There is not a planned system encouraging networking of agencies, organizations, and individuals who share a common interest in promoting the public safety, prevention, and EMS messages. This includes interface with such agencies as the American Heart Association, American Red Cross, Governor's Highway Safety Representative, Safe Kids Campaign, MADD/SADD, and others.

It should be recognized that while OEMS efforts in this area may fall short of the optimum, they are considerably stronger than those apparent in many states.

### Recommendations

- ◆ *Engender and foster support for a multi-agency coalition to address the broad spectrum of public safety and EMS PI&E issues.*
- ◆ Under the aegis of this consortium, develop a long range plan for PI&E and specifically identify what portion of that effort will be the direct responsibility of the OEMS, the regions, and the local providers.
- ◆ Explore sources of additional funding for these specific activities through such agencies as NHTSA, CDC, private foundations, and others.
- ◆ Continue to survey public attitudes and awareness about EMS systems using all available means and move to become increasingly sophisticated in the collection and validation of these data. Use these findings to further refine the PI&E program and to document grass roots support for EMS and trauma care systems in Connecticut.
- ◆ Review the recently published NHTSA document, "Public Information, Education and Relations Conference, Final Report" for guidance in developing PI&E programs.

## I. MEDICAL DIRECTION

### Standard

EMS is a medical care system that includes medical practice as delegated by physicians to non-physician providers who manage patient care outside the traditional confines of office or hospital. As befits this delegation of authority, it is the physician's obligation to be involved in all aspects of the patient care system.

Specific areas of involvement include the following:

- planning and protocols
- on-line medical direction and consultation
- audit and evaluation of patient care.

### Status

The State of Connecticut proved to be farsighted when it developed the enabling legislation for EMS in 1975. In the statutes, the State has the authority vested in the OEMS to guarantee medical accountability of the ALS-EMS provider, i.e. the advanced provider must operate within an organized EMS structure that has undergone a Certificate of Need (CON) process and is associated with a sponsoring hospital that provides a medical director, protocols, standing orders, and on-line medical direction. Treatment protocols created and approved by a medical director are required for all levels of provider certification above the EMT level. The protocols are developed at the local level, more specifically by the sponsoring hospital and medical director. They define the accepted standard of prehospital treatment and delineate those procedures the prehospital provider may perform prior to contact with the hospital for on-line medical direction. The development of protocols at the local level rather than the regional or state level may lead to variations in treatment among EMS services located in close proximity to each other. Without a standardized approach to treatment within a catchment area, it becomes very difficult to do effective audit and quality assurance, since a patient delivered to an institution other than the sponsoring institution may not be included in the evaluation. There appears to be no regional mechanism for an oversight program to evaluate the provision of medical care by the prehospital provider as it relates to patient care and outcome, appropriateness of training programs, and medical direction.

Within the State, there appears to be little or no medical direction or supervision of the basic EMT or MRT. The treatment procedures provided by personnel at these levels of certification are not specifically developed, reviewed, or approved by a physician who has medical direction authority. There appears to be no effective audit or review process in place that could lead to a change in the education process or improvement of medical accountability of the most numerous of EMS providers in the State.

Also there appears to be no required or mandated medical oversight of EMS system dispatchers who give pre-arrival emergency intervention instructions to callers.

MIC

There are several levels of EMT provider that are not officially certified at the state level but are providing invasive treatments, i.e. PASG, EOA, EMT-D, based on training and permission by the medical community at the local level. These courses are approved by the OEMS but apparently do not follow a well defined curriculum or testing mechanism nor upon completion are their personnel certified. The medical legal concerns with this aberrancy are numerous.

There are no well defined qualifications for the medical directors from sponsoring hospitals and no requirement for qualification or training of on-line medical physicians.

The development of EMS system policies, procedures, and protocols is at the local level, and they are inconsistent within the same region and are not universally accepted. There appears to be no mechanism or effort to implement these important components of an EMS system at the regional or the state level, although the authority appears to be in the state regulations to do so.

#### Recommendations

- ◆ *Define the responsibilities of the State Medical Director and give the director the authority to perform those duties and implement the state EMS plan as it relates to the provision of medical care.*
- ◆ Establish a medical advisory committee with representation based on geography and medical subspecialty to advise the medical director.
- ◆ *Establish qualifications for systems medical directors and on-line medical directors.*
- ◆ Require radio communication courses for on-line medical directors.
- ◆ Require OEMS approval of all physicians providing on-line medical direction.
- ◆ Medical oversight should occur when EMS dispatch is to give pre-arrival instructions. Medical protocols for pre-arrival instructions should be developed and approved by a medical advisory committee. All runs involving pre-arrival instructions should have medical review for QA and educational purposes.

- ◆ *Establish medical direction for quality assurance purposes for all prehospital providers including the MRT and EMT basic.*
- ◆ *Discontinue the provision of invasive procedures by EMTs until their levels of performance are defined by the OEMS, standardized training programs are implemented, and certification levels are instituted.*
- ◆ *Develop a mechanism to assure that all education and practice standards are based on current appropriate medical practice principles.*

## J. TRAUMA SYSTEMS

### Standard

To provide a quality, effective system of trauma care, each State must have a fully functional EMS system in place. Enabling legislation should exist for the development of the trauma system component of the EMS system. This should include trauma center designation (using ACS-COT guidelines as a minimum), triage and transfer guidelines for trauma patients, data collection and trauma registry definitions and mechanisms, mandatory autopsies, system management, and quality assurance of the system's effect on trauma patients. Rehabilitation is an essential component of any statewide trauma system.

### Status

There is enabling legislation for an EMS system in the State. However, no legislation specific to a statewide trauma system dealing with the continuum of care from prevention through rehabilitation currently exists. Such a system in the form of regulations has been proposed. The latest draft of these regulations is dated March 5, 1991. This is the culmination of a four-year effort by a group of approximately 40 individuals representing the spectrum of trauma care personnel.

In the absence of enacted trauma system legislation, there is no formal process for trauma center designation. Two hospitals have been verified as Level I centers by the ACS. A loose form of triage and transfer protocols set forth by the State Medical Advisory Committee serve as guidelines, however compliance and interpretation of these is quite variable throughout the State. These decisions are influenced by many factors including sponsor and receiving hospital policies concerning medical control, CMED, and the responding agency, among others. There appears to be no OEMS coordination or oversight.

There is no statewide/systemwide coordinated, integrated data collection system. Independent trauma related data collection is carried out in varying degrees by CMED, Level I verified hospitals and some other hospitals, NHTSA, the Connecticut Hospital Association and prehospital provider agencies. Some of these data are not easily accessed and very little is analyzed for any purpose. There is no state trauma registry definition or mechanism. There is no mandate for autopsy of trauma related deaths. Finally, there is no state system management structure or quality assurance/improvement program in place.

In summary, the proposed trauma system regulations and plan cover the majority of system components but are somewhat vague. Particular deficiencies exist in that there is no clear delineation and delegation of authority at the state, regional, and local levels. There need to be more clearly defined organizational lines of responsibility and accountability. There are no organized prevention or integrated rehabilitation components identified. These components are not included in the standards but are essential to developing a system which truly addresses trauma care as a continuum. Finally, there is no provision for dedicated or general funding of the system and OEMS. The timeline proposed for implementation and operation of the system by July 1992 is admittedly ambitious and perhaps unrealistic. This may not allow adequate time for proper baseline evaluation and planning. Time carefully spent in these initial phases may facilitate implementation and shorten the time necessary to attain a functioning quality system.

### Recommendations

- ◆ ***Complete implementation of Trauma System Plan over the next three years.***
- ◆ There should be at least one FTE within OEMS dedicated to data management, trauma registry development and trauma system development.
- ◆ There should be clear delegation of responsibility for prevention program coordination within the PI&E Section.
- ◆ Incorporate the rehabilitation phase of care into the system plan possibly to include facility categorization and data submission to the registry.
- ◆ Reconsider the intent of Section 19a 177-3 & 4 of the regulations. Clearly define contractual obligations between designated hospitals and OEMS as well as the primary authority for designation.
- ◆ ***Assimilate baseline information necessary to perform systemwide/statewide resource, process, outcome evaluation and needs assessment.***
- ◆ Conduct needs assessment and document results prior to further standards, protocol, designation or registry planning.
- ◆ Conduct a statewide Trauma Care Study which targets current trauma care rendered by Connecticut facilities, rates of uncompensated trauma care, and includes system management costs.

- ◆ Include aeromedical, specialty patient, interstate and interhospital transfer protocols in policies and procedures.
- ◆ Promulgate standard credentialing and CME requirements in trauma care for medical directors, trauma team members, and prehospital providers.
- ◆ Seek State Attorney General involvement with data collection and analysis of plans, including regulatory review as necessary.
- ◆ A Request For Proposal procedure for trauma registry operation should be developed based upon inclusion criteria data set, reports, reporting schedule and distribution, and standard operating procedure. This has the advantage of relative assurance of data management expertise and contractual accountability of the successful bidder.