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Department of Health and Senior Services
Office of Emergency Medical Services

EMS System Review

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Submitted by:
TriData, A Division of
System Planning Corporation

THE STATE OF NEW JERSEY
EMS SYSTEM REVIEW, DHSS, OEMS

Submitted to:

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EXECUTIVE SUMMARY

In 2006, the State of New Jersey decided to conduct a study to assess its Emergency Medical Services (EMS) system. The study was mandated by the New Jersey State Legislature to review the current EMS system and determine immediate and future needs. The State of New Jersey Department of Health and Senior Services (DHSS) selected TriData, an internationally recognized emergency service consulting firm to conduct the study. This study provides 55 recommendations for New Jersey to consider.

Overview

New Jersey has a two-tiered EMS system that provides basic and advanced life support services. Factors such as the system's financial structure, decline in volunteer membership, lack of comprehensive legislation, and a weakened Advanced Life Support (ALS) system have placed the EMS system in a state of near crisis. The New Jersey EMS systems consists of more than 25,000 volunteer and career providers, including first responders, emergency medical technicians (EMTs), paramedics, nurses, and physicians. The New Jersey's Office of EMS (OEMS) maintains the certification of 1,500 paramedics, 22,000 emergency medical technicians (EMTs), and the licensure of more than 3,000 vehicles, including mobility assistance vehicles, ambulances, mobile intensive care units, specialty care transport units, and air medical units.

The population density differs greatly between the northern and southern regions of New Jersey. This variation affects the demand and delivery of EMS services throughout the state. At present, New Jersey has no state EMS medical director nor does it have a regional EMS system. The lack of statewide medical direction results in a loss of transparency that has led to fragmentation of EMS medical oversight, especially between ALS and Basic Life Support (BLS) services. New Jersey's State oversight is highly centralized and with little coordination between state, regional, local, and volunteer agencies. TriData suggests that New Jersey restructured their EMS system by creating a regional approach that will decentralize daily management of EMS by creating three geographical regions.

Project Scope and Methodology

This study addressed each component of the EMS system based on the NHTSA EMS Agenda for the Future. To analyze the EMS system, TriData conducted a four-phase analysis that included interviews of key leaders, 13 focus groups of organizational and provider constituents, interviews with NJOEMS officials, and the triangulation of data.

Inter-jurisdictional Comparisons

Inter-jurisdictional comparisons are helpful in identifying techniques and ideas that have met with varying success in other areas. In this study, the structure and organization of New

Jersey's EMS system is compared to those of five other states (i.e., Ohio, Virginia, Maryland, Delaware, and Connecticut) assessing the strengths and weaknesses of the state EMS system. Comparisons were based on states that had population densities similar to New Jersey. An analysis of the samples states found that New Jersey differed from most, since their local municipalities are not legally responsible for the provision of EMS. In addition, New Jersey has no state EMS medical director nor does it have a regional EMS system.

EMS System Assessment

New Jersey's EMS system was evaluated through feedback provided from 13 focus groups representing EMS organizations and EMS providers. The assessment consisted of two parts which were evaluating the current state EMS system based on the National Highway Traffic Safety Association's (NHTSA's) 14 components and determining future priorities for the state based on each component. Overall, the focus groups determined that the state system was "marginal" with EMS Research and System Finance being unsatisfactory. The focus groups identified up to seven priorities for each component.

Recommendations for Changing EMS Regulation and Legislation

TriData was requested to review the current EMS legislation, executive orders, and regulations that govern New Jersey EMS and to provide appropriate recommendations. New Jersey must develop and enact comprehensive legislation that overhauls the entire EMS system. The current legislation emphasizes restrictions and political pacification over an effective systems approach for quality EMS care.

Major changes recommended include adopting enabling legislation, removing the restrictions on paramedics and EMTs using their skills in hospitals or other healthcare settings, removing patient care protocols from regulations, deleting the regulation that requires online medical direction for all patients treated by ALS providers, and requiring that all EMS services be licensed by NJOEMS.

The New Jersey State EMS System

The New Jersey EMS system should be redesigned to manage a modern statewide EMS system. NJOEMS should be renamed the New Jersey Division of EMS (NJDEMS) and be headed by an Assistant Commissioner. State-level staff positions should be filled and not allowed to remain vacant. A northern, central, and southern EMS region should be created, each having a regional director and staff. These changes should be phased in over 2 years. NJDEMS should hire a full-time, state EMS medical director who has full medical oversight of the system. Changes to EMS protocols and procedures should not require approval of the Commissioner of Health and Senior Services.

Air Medical EMS (JEMSTAR)

Air medical EMS is provided mainly by a state air medical transport (JEMSTAR) program that is augmented by private agencies. Specifically, air medical EMS response is provided by a joint venture between the New State Jersey Police (NJSP) and contracted EMS providers. The NJSP provides the aircraft and two pilots per helicopter and the DHSS provides funding for two flight nurses or one flight nurse and one flight paramedic. Air medical response is performed via the use of the two helicopters available. One aircraft called the NorthStar provides coverage for northern New Jersey while the other, called SouthStar provides coverage for the southern region. There are three private air medical units that serve as a backup source when the NorthStar and SouthStar are unavailable.

Discipline and safety are of primary concern for organizations with stewardship responsibilities for air medical EMS. New Jersey has been fortunate to have maintained a high safety record during flight transport. JEMSTAR provides approximately 1,700 transports per year. The number of transports by private air medical agencies is unknown. JEMSTAR is funded by a $3.00 charge on vehicle registrations and a charge of $1,337 for each transport. Private agencies are not limited as to how much they charge, but receive no state funding. Recommendations were made to adjust the distribution of vehicle registration money and charges for transport.

Advanced Life Support Delivery

New Jersey's ALS system provides excellent clinical care by well-trained paramedics and an active cadre of physicians who provide medical oversight. However, financial issues threaten the infrastructure of hospital-based ALS as they are faced with the challenge of maintaining adequate staffing and keeping ALS programs profitable. A paradox exists between ALS care and ALS project viability. Once profitable for hospitals, ALS projects are struggling to maintain financial stability as non-transportation providers are unable to earn sufficient Medicare/Medicaid funds to assure profitability. Currently, ALS projects must be hospitals or hospital consortium services. ALS provision should be permitted by non-hospital agencies with a strict set of standards in place prior to the commencement of these services. One paramedic and one EMT should be the minimum crew for ALS transport units and one paramedic should be the minimum for non-transport ALS units. Organizations such as the fire service, municipal EMS, commercial EMS, hospital/hospital consortiums, and volunteers could take a larger role in providing or augmenting ALS services in New Jersey.

EMS Workforce

The workforce is the most critical factor in the provision of effective EMS. It is also the biggest challenge faced by EMS. The Institute of Medicine report identifies several workforce challenges that are common to EMS nationwide including recruitment and retention of

personnel; lack of nationwide training requirements leading to a wide range of quality of care; possible dangers of prehospital care including risk of violence, infectious and contagious diseases, risk of terrorist incidents, and dangers from ambulance crashes; and low pay and benefits, particularly among providers outside the public safety sector.[2]

Those choosing EMS as a career, who are not either firefighters or police officers, do not receive compensation and benefits equal with their fellow public safety providers. To increase salary and benefits, many providers have become nurses or other mid-level health care providers. Traditionally, a volunteer EMS provider was someone who provided their time and services for no compensation. The current definition of a volunteer is not universal since many receive some type of compensation for their services. Some volunteers feel excluded, especially in places where career providers have taken over prominent roles. In order to achieve any success, volunteer services will have to "let down their guard" and allow for new ideas and concepts. Volunteer EMS leadership should support EMT-B as the standard for BLS care and advocate for diverse methods of education that will increase accessibility to training. The next few years are critical to the future of volunteer EMS in New Jersey. Critical decisions that favor good patient care and wise uses of resources may help keep the volunteer system strong. Leaning towards territorialism and resisting change will likely continue the current spiral toward the demise of volunteer services.

[2] IOM (2006). *Emergency Medical Services at the Crossroad.* Institute of Medicine. Washington, DC: National Academic Press

I. INTRODUCTION

The New Jersey EMS system must change to continue effective delivery of prehospital care. The system's financial structure, decline in volunteer membership, lack of comprehensive legislation, and weakened ALS system is in near crisis. One particular issue encountered by New Jersey EMS leaders involves the public's acceptance of EMS, which has led to changes in expectations of quality care, the role that EMS should play in our healthcare system, and how EMS is best provided. These are critical as citizens of and visitors to New Jersey are dependent on the expedient and reliable response of EMS personnel for the provision of prehospital care and transport to an appropriate medical facility.

In addition, changes in social, technological, educational, environmental, and political aspects of emergency care require governmental entities to rethink how EMS should be regulated. This includes medical oversight of patient care, EMS system design, stewardship of access, economies of scale, and the integration of new technologies that enhance patient care and information management. Factors such as an increase in demand for EMS among the senior citizen population, the growing number of underinsured and uninsured citizens, and tighter operating budgets challenge governmental and private providers to provide competent EMS services at a reasonable cost. Public expectations are not easy to respond to as their impression of EMS is different from what actually occurs. Until recently, the media portrayed EMS systems as always prepared, always staffed, and usually within a few minutes of any emergency. Save rates from cardiac arrest were shown as high and emergency departments were always standing by with a full team of experts ready to save almost everyone who arrives.[3]

The challenges and opportunities that face New Jersey EMS can be summarized in by five major items:

1. The need to sustain EMS organization's capabilities and mission in the face of growing resource needs and reimbursement constraints.
2. Meeting the multifaceted workforce crisis that exists throughout the country.
3. Ensuring patient safety and good clinical outcomes; reducing variability in quality and cost; and demonstrating positive impact on the health status of individuals, families, and communities.

[3] Bledsoe, B. (2007). Have We Set the Bar Too High? *Journal of Emergency Medical Services* [Online Version], 32(3), 1-7.

4. Redesigning EMS systems and processes, building new operating models, and overcoming technical and cultural obstacles along the way.
5. Maintaining access to capital to enable needed investments in facilities, technology, and equipment.[4]

Tasks

In order to effectively address the challenges encountered by the New Jersey EMS system, the development of a complex framework that consisted of multiple tasks was required. These tasks included the handling of administrative issues as well as the following project-specific objectives, wherein TriData would perform the following:

- Identify and meet with stakeholder organizations to evaluate each component of the New Jersey EMS system based on the 14 attributes in the NHTSA EMS Agenda for the Future.[5]
- Conduct focus groups with physicians, EMTs, paramedics, air medical providers, nurses, fire service first responders, and emergency dispatchers to discuss EMS system needs, current and future challenges, the statewide EMS system, the hospital-based EMS model, JEMSTAR, the EMS workforce and volunteer development, and EMS education and training.
- Review legislation, including existing federal and state laws, statutes, regulatory codes, pending legislations, and professional standards and guidelines pertaining to EMS, and develop a strengths weaknesses opportunities threats (SWOT) analysis outlining the related SWOT to the New Jersey EMS system.
- Review the hospital-based ALS service model, consider the advantages and disadvantages of alternate models, and determine the models that would be most financially advantageous for provider organizations.
- Review JEMSTAR, including logistics, dispatching, response times, possible private partnerships, and compare with other public and private air medical services.
- Review statewide prehospital EMS systems based on outcomes of the focus groups and compare the New Jersey system to other statewide systems.

[4] Prybill, L.D. (2003). Challenges and Opportunities Facing Health Administration Practice and Education. *Journal of Healthcare Management*, *48*(4), 223-231.
[5] NHTSA. (1996.) EMS Agenda for the Future. Washington, DC: HRSA.

- Evaluate the current and predicted workforce demographics in New Jersey, access to EMT and paramedic training, career opportunities, and the volunteer force.
- Integrate focus group results and reports from previous objectives to reach conclusions and make recommendations to improve the New Jersey EMS system.

Basic Structure of New Jersey EMS

The New Jersey EMS system is two tiered and provides both Basic and Advanced Life Support services. Responding to over 800,000 requests for service each year, the New Jersey EMS operating staff includes more than 25,000 volunteers and career providers, including first responders, EMTs, paramedics, nurses, and physicians.[6]

The New Jersey Office of EMS (OEMS) maintains the certification of more than 22,000 Emergency Medical Technician–Basics (EMT–B), 1,500 Emergency Medical Technician-Paramedics (EMT–P), and the licensure of more than 3,000 vehicles, including mobility assistance vehicles, ambulances, mobile intensive care units, specialty care transport units, and air medical units.[7]

Basic Life Support – Basic Life Support (BLS) services in the State of New Jersey are generally responsible for patient hospital transports. BLS providers include both career and volunteer operators. Career operators are licensed BLS providers that charge fees for services provided. These agencies originally operated primarily within larger cities, such as Trenton, Newark, and Camden, but in recent years have spread into suburban and rural areas. Volunteer services that wish to charge fees for services must first be licensed then fall under the same rules as commercial providers. All hospital or municipal-based services must be licensed regardless of their fee-for-service status.

Volunteer agencies, on the other hand, do not charge for services and are not regulated by the state. This includes approximately 400 members of the New Jersey State First Aid Council (NJSFAC) and over 110 providers that are neither licensed by the NJOEMS nor members of NJSFAC. Because the state does not regulate volunteer providers, it is difficult to assure quality, staffing levels, or equipment standards.[8]

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[6] State of New Jersey Purchase Bureau, Division of Purchase and Property, Department of the Treasury. *RFP for Analytic System Review of the EMS System within the State of New Jersey*.
[7] State of New Jersey, Department of Health and Senior Services, Office of EMS. http://www.state.nj.us/health/ems/index.shtml.
[8] State of New Jersey Purchase Bureau, Division of Purchase and Property, Department of the Treasury. *RFP for Analytic System Review of the EMS System within the State of New Jersey*.

Advanced Life Support – Dispatched only to life-threatening incidents, Advanced Life Support (ALS) providers offer the highest level of prehospital care. ALS service in the State of New Jersey is provided by paramedics and Mobile Intensive Care Registered Nurses through Mobile Intensive Care Units (MICU) and JEMSTAR helicopters.

MICUs are operated by licensed, acute-care hospitals and are bound by a state-issued certificate of need, which allocates sole-provider service areas to specific hospitals. These ALS units are generally prohibited from transporting patients, unless no BLS ambulance is available. Three exceptions are the University of Medicine and Dentistry of New Jersey (UMDNJ) EMS in Newark, Jersey City Medical Center EMS in Jersey City, and Robert Wood Johnson University EMS in New Brunswick, that routinely provide both BLS and ALS transport services.[8]

JEMSTAR – The JEMSTAR Air Medical Program was designed to provide rapid emergency transport and care for trauma patients in New Jersey. The program operates four medically-equipped Sikorsky S76-B helicopters (two operational helicopters and two backup) that provide on-scene landings and inter-facility transfers. The helicopters are staffed by ALS flight paramedics and a flight nurse and flown and maintained by the New Jersey State Police (NJSP). Several privately-operated air medical providers are also licensed to provide inter-facility transports and backup JEMSTAR helicopters as needed.

NorthSTAR and SouthSTAR are the two JEMSTAR helicopters in operation to serve the State of New Jersey. NorthSTAR is based at Somerset Airport and covers the northern portion of the state. The EMS component and medical direction for NorthSTAR are provided by the EMS department and Level I trauma center at University Hospital. SouthSTAR is stationed at West Jersey Health System's Hospital at Vorhees. The medical component is provided by the Mobile Intensive Care Unit Program of Virtua Health System, with direction for trauma patients provided by the Level I trauma center located at Cooper Hospital/University Medical Center, Camden.[9]

Political Structure of the State

Like the United States government, the government of the State of New Jersey is divided into three coequal branches: (1) the legislative branch, responsible for enacting laws; (2) the executive branch, which includes the Governor and state agencies and functions to carry out the programs established by law; and (3) the judicial branch, including the state supreme court and lower courts. New Jersey's state government also includes a variety of departments and agencies,

[9] State of New Jersey, Department of Health and Senior Services, Office of EMS. http://www.state.nj.us/health/ems/ams.shtml.

including the Department of Health and Senior Services (DHSS), for which this study has been undertaken.[10]

All land in the State of New Jersey is part of both a city and a county. The State is broken into 21 counties and 566 municipalities, which exist under the Home Rule Charter.[11] Home Rule grants power to municipal governments to carry out a range of governmental activities under their own authority.[12]

Overview of New Jersey EMS Organizations

Organizations central to this study are the New Jersey Office of EMS (NJOEMS), the New Jersey EMS Council, the New Jersey Mobile Intensive Council, the New Jersey State First Aid Council (NJSFAC), the New Jersey Medical Transportation Association (NJMTA) and the New Jersey Association of Paramedic Programs (NJAPP). The New Jersey Office of EMS was established in 1967 under the Department of Health and Senior Services (DHSS), Division of Health Infrastructure Preparedness and Emergency Response. It was the first office of its kind in the United States and is responsible for regulation and oversight of career EMS providers in the State of New Jersey.[13] The New Jersey State First Aid Council (NJSFAC) functions as an association for New Jersey's volunteer EMS community (BLS providers) with approximately 80 percent membership.[14] The goal of the NJSFAC is to "provide the highest quality of trained volunteer personnel and equipment in answering basic life support first aid calls in the State of New Jersey." [15] The NJSFAC is governed by an executive board, elected annually, that includes seven executive officers including three executive vice presidents (north, central, and south) that are elected by member organizations in the areas in which they provide BLS services. More specifically, the executive board is comprised of the following positions: president; northern, central, and southern executive vice presidents; secretary; membership secretary; treasurer; assistant treasurer; and a chaplain.

The NJSFAC also advocates having a district committee in place in order to assist squads in achieving the training and equipment requirements set forth by the Council.[15] In addition, this

[10] New Jersey Legislature. http://www.njleg.state.nj.us/legislativepub/our.asp
[11] Wikipedia. http://en.wikipedia.org/wiki/New_Jersey
[12] Home Rule. http://njslom.org/homerule.html
[13] State of New Jersey, Department of Health and Senior Services, Office of EMS. http://www.state.nj.us/health/ems/ams.shtml.
[14] New Jersey State First Aid Council. http://www.njsfac.org/index.shtml
[15] NJSFAC Standards Committee: Mission Statement. (2007). New Jersey State First Aid Council. http://www.njsfac.org/standards.shtml

organization identifies existing gaps in training or equipment and to notify the District of which actions should be taken to remedy the situation.

Methodology

The diversity of EMS constituencies offered many viewpoints and sources of information. TriData developed a method to examine each constituency with the priority of accurately reporting information.

TriData conducted a four phase analysis using: interviews of key leaders, 13 focus groups of organizational and provider constituents, interviews with NJOEMS officials, and the triangulation of data in order to prepare the draft report.

Interviews were conducted using open-ended questioning methods that encouraged the respondent to explain issues in detail. We assured participants that individual names would not be associated with specific statements. Notes were taken by project team members and used to provide direction for the focus groups. Focus groups were conducted using a nominal group process technique. All members, regardless of rank or provider level, had equal voting rights. Any issues requiring a vote were confidential, even between providers from the same organization.[16,17]

Interviews of Key Leaders – In order to achieve buy-in to the process, TriData decided to interview key leaders from various New Jersey EMS organizations. These organizations were chosen in consultation and agreement with the New Jersey Office of EMS. Key leaders were selected from organizations that included government regulators, volunteer providers, physicians, commercial EMS agencies, fire service officials, air medical providers, nurses, administrators, and commercial providers (Appendix D).

All interviews were conducted at the New Jersey Office of EMS in Trenton, NJ with the exception of one that was conducted by telephone. The interviews were conducted by the project manager and senior consultants. Most interviews were witnessed by the state OEMS project manager. Leaders who were interviewed were asked to comment on the strengths and weaknesses of the EMS system, what they expect from the study, and what should occur to facilitate change.

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[16] Mycoted. (2006). Improved Group Process Techniques. Retrieved from: http://www.mycoted.com/Improved_Nominal_Group_Technique, p. 1.
[17] Sample, J.A. (1984). Nominal Group Technique: An alternative to Brainstorming. Journal of Extension, 22(2), 1-3.

During the interviews of key leaders, TriData explained the proposed focus group structure and asked these leaders for buy-in into the process without committing to support of any outcome. Each key leader offered their support and organization's participation in the focus group process. Key leaders were also given contact information for the project manager and were encouraged to establish contact as necessary.

Focus Group Meetings – During February and March of 2006, 13 focus groups were held with constituent groups that represented New Jersey EMS. Seven groups representing key organizations and six groups representing different provider levels each participated in a focus group. Participants in the organizational constituents groups were chosen by leaders from within the group. NJOEMS officials chose participants from the provider groups by advertising the opportunity on their website, requesting applications, and choosing participants that represented different geographic locations and delivery models. Figure 1 lists the 13 focus groups that were conducted.

Figure 1: 13 Focus Groups

Organization Focus Groups	Provider Focus Groups
New Jersey State First Aid Council	EMTs
New Jersey Medical Transportation Assn.	Paramedics
New Jersey State EMS Coordinators	EMS Dispatchers
New Jersey State Fire Chiefs Assn.	EMS Administrators
New Jersey State Paramedic Assn./New Jersey State Hospital Association	EMS Educators
New Jersey Air Medical Association	Critical Care Providers
New Jersey EMS Medical Directors	

Focus Group Subject Matter – Focus groups were conducted at the Allentown Volunteer First Aid Squad in Allentown, NJ. This location was chosen by NJOEMS due to its central location. Each group contained between six and 14 participants and was facilitated by two or three TriData facilitators. Each session lasted approximately eight hours and was divided into two sessions. During the morning session, the group evaluated the NJ EMS system based on present conditions. During the afternoon session, groups offered suggestions for improvement and prioritized these suggestions.

The morning session began with an orientation by the TriData project manager. This included the background of the project, an introduction to the reference documents, a review of the process, and the evaluation form. Each participant was provided a reference manual that contained the following references:

- The NHTSA EMS Agenda for the Future
- The NHTSA EMS Agenda for the Future Implementation Guide
- The NHTSA EMS Research Agenda for the Future
- The NHTSA EMS Education Agenda for the Future
- The National EMS Scope of Practice Model

When participant groups provided names in advance of the group meeting, participants received email copies of the documents prior to the sessions. Each document was available via the Internet.

The NHTSA EMS Agenda for the Future is a follow-up to the 1973 Department of Transportation EMS Act that identified 14 critical components (attributes) of EMS. They included:

- Integration into the Healthcare System
- EMS Research
- Legislation and Regulation
- System Finances
- Human Resources
- Medical Direction
- Education Systems
- Public Education
- Prevention
- Public Access
- Communications Systems
- Clinical Care
- Information Systems
- Evaluation[18]

[18] NHTSA. (1996). *Emergency Medical Services Agenda for the Future*. National Highway Transportation and Safety Administration.

TriData facilitators led the group in a discussion of the state of the New Jersey EMS system in regards to each component. Group members identified specific strengths and weaknesses for each component and each participant independently evaluated each component. Participants assigned one of the following ratings to each component:

- ***Excellent*** – NJEMS has already achieved the Agenda for the Future attribute.
- ***Very Good*** – NJEMS has either achieved or has plans to achieve the Agenda for the Future attribute.
- ***Satisfactory*** – NJEMS has minimally achieved most of the Agenda for the Future attribute. A specific plan is needed to complete this attribute.
- ***Marginal*** – NJEMS has recognized what is needed to achieve the Agenda for the Future guidelines but does not have a plan of action.
- ***Unsatisfactory*** – NJEMS has not recognized this Agenda for the Future attribute as part of the EMS system.

The afternoon session involved a component-by-component review of the strengths and weaknesses determined in the morning session. Using a nominal process, participants identified future needs for NJ EMS and prioritized each. Each participant anonymously identified priorities, indicating their order on an index card. Analysis of the data was not provided to the participants.

Data Analysis Methods

Data was analyzed using Microsoft Excel 2003 and GB-STAT 10.0 statistical software package. The goals were to determine the current status of NJEMS and the priorities for the future of NJEMS. This included the attempt to determine whether there is consensus among EMS leaders or if variation was pervasive within the EMS community's leadership.

Current State of NJEMS – Data from the scoring documents were transferred to a Microsoft Excel 2003 file where scores were tabulated by focus group and by component. Scores included averages for each focus group and each component. Tests for normality were calculated and score distributions were analyzed by the above groups. Appropriate chart and graphic models were developed.

Priorities by Component – Data from the scoring cards were transferred to a Microsoft Excel 2003 file where scores were tabulated by components for each focus group. Data were considered ordinal as they indicated the priority for improvement. Scores were calculated to determine the number of times the idea was identified and the priority of the idea.

The top five to seven items were identified based on a combination of times identified and priority. Graphs of the results were constructed using Microsoft Excel 2003 and GB-STAT software.

Follow-Up Meeting with DOH and OEMS

In May of 2007, a follow-up meeting was held with the NJ Department of Health (DOH) and the NJOEMS. The TriData team met with DOH Senior Assistant Commissioner David Gruber and Assistant Commissioner Joseph Tricarico to discuss the preliminary findings of the focus groups and other critical issues. DOH and TriData reached consensus on the need for more interaction with local officials. This was discussed earlier but confirmed at this meeting. Assistant Commissioner Tricarico would coordinate a meeting between TriData and several city, town, and borough mayors from across the state. The meeting was scheduled for May 31, 2007 at Robert Wood Johnson Medical School.

Meeting with the Mayors

On May 31, 2007, TriData conducted a meeting with representatives from the New Jersey League of Municipalities. Meeting logistics were arranged by Assistant Commissioner Tricarico (New Jersey Department of Health and Senior Services). Mayors from 30 cities, selected by DOH, were invited to attend but only three cities sent representatives.

The following personnel participated in the meeting:

- The Honorable Chuck Chiarello – Mayor, City of Buena Vista, NJ
- Ms. Rochelle Williams – Health Officer, City of East Orange, NJ
- Mr. Jim Rutala – Business Manager, City of Ocean City, NJ
- Mr. Thomas Starr – Project Manager, New Jersey Office of EMS
- Dr. Harold C. Cohen – Project Manager, SPC/TriData
- Ms. Shania K. Flagg – Research Analyst, SPC/TriData

Although the attendance was less than expected, those attending engaged in productive dialogue. The most prominent issue was the financial implications of changing the EMS system. While there was consensus that municipalities needed to take more responsibility for EMS, the ability to reduce financial liabilities remained a top consideration. Other subjects discussed included:

- The need to establish dialogue between agencies to convey the need for change
- The need to view the situation comprehensively
- The importance of EMS data and related services collection and analysis
- No progress will occur without change
- The establishment of basic standards applicable to all EMS personnel
- The need to make New Jersey's EMS system current

Attendees were provided copies of preliminary data for consideration by their communities. The data were not discussed in detail (Appendix E).

Formulation of the Draft Report

The formulation of the draft report occurred during late June 2007 with a target date for completion of June 30, 2007. Senior Assistant Commissioner Gruber and Assistant Commissioner Tricarico are scheduled to meet with Commissioner Jacobs on July 17, 2007.

After writing and editing the chapters of the first draft, materials were sent to President Philip Schaenman for corporate review. After this review and corrections, a draft copy will be sent to Assistant Commissioner Gruber.

On July 15, 2007, TriData sent a complete version of the first draft to Assistant Commissioner Gruber and key DHSS and OEMS personnel. On July 19, TriData met with EMS Director Halupke and EMS Public Health Representative Mondoro to discuss the draft and suggest revisions.

Limitations

Three major limitations led to TriData's inability to provide the quantitative data that we wished to analyze. First, data on run-time intervals to examine response issues were generally not available. One set of data provided to the TriData team allowed for proper analysis. Second, the New Jersey State First Aid Council (NJSFAC) refused to provide any data on any of their organizations, response times of member squads, or quality management information concerning any of their member squads. The TriData team also attempted to visit NJSFAC council squads to meet with their personnel to discuss issues. Even after offering to allow NJSFAC to select the squads that TriData should visit, the council took no action on their request. Third, since there is no statewide PCR and non-licensed squads are not required to report data, NJOEMS was unable to provide extensive data.

New Jersey and its municipalities in general have a history of having a fragmented data system. Between 1998 and 2005, TriData performed three studies within New Jersey with each citing poor data access and information management as a key weakness.[19,20,21]

Organization of the Report

The remainder of the report is organized as follows:

Chapter 2: Inter-jurisdictional Comparisons – Several state EMS systems are compared with primary findings placed in a comparison chart at chapter's end.

Chapter 3: EMS System Assessment – The chapter includes a comprehensive report on the 13 EMS Focus Groups that were conducted. The chapter is divided into two major sections. First, each focus group gives an assessment of the 14 components of the EMS system in New Jersey. Second, there is an identification of priorities for each component. Throughout the chapter, there are recommendations made based on the assessment of TriData's findings.

Chapter 4: Legislation and Regulations – The chapter reviews the current EMS legislation, regulations, executive orders, and other procedures that govern New Jersey EMS. Throughout the chapter, we recommend general and specific changes, emphasizing the creation of comprehensive EMS legislation and removing daily operation processes from legislation and regulations.

Chapter 5: The New Jersey EMS System – The chapter reviews the current state EMS system and recommends changes to state and local EMS structures. Emphasis is placed on redesigning and strengthening the EMS system, including regulation of the volunteer EMS system.

Chapter 6: Air Medical EMS (JEMSTAR) – The state air medical EMS system is reviewed, including the JEMSTAR system and commercial EMS operations. Recommendations are made concerning the operations, financing, and oversight of air medical EMS.

Chapter 7: Advanced Life Support Programs (ALS) – The New Jersey ALS program is reviewed from its clinical, financial, and administrative aspects. Specifically identified are financial issues that threaten the current status of New Jersey ALS. Changes in the

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[19] SPC/TriData. (1998). *Study of Fire and Emergency Medical Services Delivery for Hamilton, NJ.* Arlington, VA: SPC/TriData.
[20] SPC/TriData. (2005). Technical Analysis of Fire/EMS Response Times Roxbury Township, New Jersey. Arlington, VA: SPC/TriData.
[21] SPC/TriData. (2006). Review and Analysis of the Trenton, New Jersey Dispatch and Communications Center. Arlington, VA: SPC/TriData.

ALS program are suggested to accommodate new ALS systems without sacrificing the quality of ALS care that New Jersey is known for.

Chapter 8: EMS Workforce – The chapter provides an overview of challenges faced by career and volunteer EMS services. Recommendations are offered to enhance career and volunteer services.

Appendices – There are four appendices attached including a summary of recommendations, focus group recruiting forms, details from the EMS focus groups participants in each focus group, and data shared with local government.

II. INTERJURISDICTIONAL COMPARISONS

Comparing the organization and structure of the EMS system in the State of New Jersey to other jurisdictions is one way to assess strengths and weaknesses. Issues including services provided by the state, funding sources, training policies, legislative regulations, and the structure through which services are rendered vary with the needs of each state. Such comparisons do not provide conclusive information, but rather they are useful in prompting jurisdictions to ask questions. Simply because most states have a certain structure does not necessarily mean that all states should. Just the same, questions should be asked to assure that each jurisdiction is organized in a manner that is best suited to their particular needs.

Attempting to compare "apples-to-apples" requires that comparisons be drawn to states with population densities similar to New Jersey. A combination of urban, suburban, and rural areas also helps to make for more useful comparisons. With a population of approximately nine million people living in a land area of less than 7,500 square miles, New Jersey is the most densely populated state in the United States. Other states that cover the urban-to-rural spectrum and have a population density high enough to allow for useful comparison include Connecticut, Delaware, Maryland, Ohio, and Virginia. These jurisdictions are reviewed in the following section and highlights identified in Table 1.

Connecticut

Connecticut has a state-level Office of Emergency Medical Services and a State EMS Advisory Board. Each of five administrative regions has a council, with all of the councils partnering with the state to implement state policy and programs at the local level. According to the Connecticut Department of Health[22], services provided by the state include:

- Training and Education
- Licensing and Certification
- Investigations
- Data
- Grants, Rural AEDs, Ambulance
- MIC/EMS-C/Trauma
- Provider Activity Reports & Annual Service Certification Renewals

[22] Information from http://www.dph.state.ct.us/EMS/index.htm.

- Medical Director
- Office Supervisor

Medical direction in Connecticut comes through the State Medical Director, whose position is primarily funded through grant money. This person advises and consults with medical directors in hospital emergency departments, who provide oversight for EMS agencies that transport patients to these facilities. The Connecticut EMS Mobile Intensive Committee is composed of a physician from each of the state's five regions. This group reviews state policies related to EMS.

There are several legislative acts that affect EMS in Connecticut. The Public Health Code lays the foundation of the EMS system with codes that govern the organization of EMS systems throughout the state, guidelines that provide direction for new organizations wishing to engage in EMS, the establishment of a statewide trauma system, and procedures for grants related to EMS equipment.

The Office of EMS receives funding through several sources. Approximately $1.2 million comes from the state, with another $8.4 million coming from grants through the Center for Disease Control (CDC), Department of Homeland Security, and other federal sources. Money from the state is primarily used for training instructors and inspecting equipment. Instructors are trained and certified by the state, teaching their classes through local fire and EMS departments and community colleges. Equipment inspection is limited to EMS equipment on ambulances, with safety inspections of the vehicles being completed by the Department of Transportation.

Delaware

EMS in Delaware is provided by a combination of state and local resources. The state operates a two-tiered system that is administered by the Division of Public Health, which is a part of Delaware Health and Social Services. Direction is provided by the Delaware Emergency Medical Services Oversight Council (DEMSOC), which provides recommendations for the EMS system to the Division of Public Health. ALS providers are certified by the state and operate under the license of one of Delaware's three counties, the State Police aviation unit, or one of two private agencies.

Training for EMS providers varies, depending on the level of certification. BLS courses, taught at the First Responder and EMT-B level, are taught by the Delaware State Fire School. ALS courses are handled by the Delaware Technical and Community College, which is accredited through the Committee on Accreditation of Educational Programs for the EMS

Professions. Both ALS and BLS providers must also complete refresher training in order to maintain certification.

Each ALS agency is provided a Medical Director by the State. BLS providers operate under the direction of the Delaware State Fire Prevention Commission, which oversees and regulates BLS operations, ambulances and apparatus, and manages all ambulance licensing and certification.[23]

The State Code of Delaware Title 16 establishes the DEMSOC and provides direction for EMS services. While the Office of EMS is a part of the Department of Health & Social Services, state law requires the DEMSOC to provide guidance and direction to the Department of Safety and Homeland Security in matters that involve EMS.

Funding for EMS in Delaware comes from several sources, including state and local levels. State-provided funding for ALS services totaled $8,339,021 in 2005. Funding levels for BLS services are more difficult to assess, as much of this tier of the system is handled through each of the independent fire and rescue companies. In 2005, the estimated disbursements from the State were $20,794,111.50. The portion of the State Aviation budget attributable to EMS care was $1,244,012.

Maryland

EMS in Maryland is under the direction of the Maryland Institute for EMS Systems, or MIEMSS. The state provides guidance and direction in the areas of operations, planning, evaluation, research, and medical control. The state also maintains a communications system and provides support for EMS education as well as prevention and public education. Licensing of commercial ambulance companies is handled at the state level. The Maryland State Police Aviation Division provides air transport through the state. MIEMSS and its activities are codified in Code of Maryland Title 30: MIEMSS.

Maryland is divided into five regions, each of which is overseen by a Regional EMS Council. These councils provide feedback to the state in areas such as policies, procedures, grants, training, communications, and legislation. Training is provided through each region, with support provided from the state. Maryland's 2006 EMS Plan identifies 21 programs that provide ALS certification and three providers of BLS training. [Recertification is handled through 15 providers of refresher training.] A database of certifications for both ALS and BLS providers is

[23] DEMSOC 2005 Annual Report

maintained at the state level, with MIEMSS also providing administrative support to each of the regional EMS councils.

Each region has its own Medical Director, who is recommended by the Regional EMS Council and approved by the State EMS Medical Director, and an Associate Regional Pediatric Medical Director. Online medical direction is available 24/7 with physicians and hospital emergency departments. Public sector agencies must also have a quality assurance program.

EMS activities in Maryland are governed by the 1993 Maryland EMS Law, which created an 11-member Governor-appointed State Emergency Medical Services Board to govern MIEMSS and a Statewide Emergency Medical Services Advisory Council (SEMSAC) to advise and assist the EMS Board. This is the same piece of legislation that established MIEMSS. Local ordinances serve to shape EMS delivery in a manner most conducive to specific service areas. More recently, Maryland Code has been modified to improve interoperability between jurisdictions, both at the intra- and inter-state levels.

Funding for MIEMSS comes primarily from the State, receiving $10.8 million in state funds last year. Much of this funding comes from a surcharge on motor vehicle registrations. Minimal funding comes from federal sources, but localities do contribute significantly to the condition of EMS in Maryland, particularly in the area of operations. Billing patients and/or their insurance carriers for EMS transport is an increasingly popular means of recouping some of the costs incurred in the operational side of EMS.

Ohio

The Ohio Division of EMS is under the purview of the Department of Public Safety. Services provided by this agency include standards for apparatus and equipment, education and certification, accreditation, and medical oversight. The Division of EMS is overseen by the EMS Board, which consists of 20 members, 19 of which are appointed by the Governor as representatives from specific EMS-related organizations and one is an Ohio Department of Public Safety staff member appointed by the Director of Public Safety.

Training is delivered throughout the state by instructors who are certified by the Ohio Division of EMS. Courses including First Responder, EMT-B, EMT-I, and EMT-P are offered through local fire and rescue agencies, hospitals, community colleges, and universities. Accreditation of training facilities is based on six factors: Administration and Organization, Faculty and Preceptors, Curriculum and Instruction, Facilities and Equipment, Students and Graduates, and Self-Assessment. The Division of EMS also oversees training for firefighters and fire inspectors, as well as certification of instructors of these courses.

Medical oversight is provided by individual Medical Directors for each agency through the Regional Physician's Advisory Board (RPAB). The state is divided into ten regions, each with one representative, who work with the State EMS Medical Director who sets protocol and establish minimum standards that serve as guidelines to develop individualized protocols best suited to each agency's needs.

Legislatively, all of the actions performed by the Division of EMS are identified in Ohio Administrative Code 4765: State Board of Emergency Medical Services, which has 19 chapters defining the exact scope of the Division's authority and the organization of the agency.

Operations in the Ohio Division of EMS are funded through three main sources. In 2005, the State provided operating funds of $3,189,690. Federal funds totaled $5,917,333, while grants from other organizations brought in $9,355,138. The State also provides grants to EMS organizations in Ohio through money collected in seatbelt fines, approximately $5 million every year.

Virginia

The Virginia Office of EMS is part of the Virginia Department of Health. A 27-person advisory board provides direction to an agency that provides training and support to EMS agencies statewide. The state is divided into 11 regions, each with its own EMS Council. These councils work with the state to assure sufficient training is made available, in each region, for ALS and BLS providers. Training can be obtained through the state, through Regional EMS Councils, and through private organizations. The OEMS is responsible for accrediting all EMS training programs. The Commonwealth of Virginia certifies EMS agencies and also maintains a list of all certified First Responder, BLS, and ALS providers throughout the state. Virginia OEMS also has a section dedicated to aiding localities with grant preparation.

There are several regulations in Virginia legal code that relate to EMS in the state. EMS vehicles, ground and air, transport and non-transport, are regulated by the OEMS and must meet state standards. Each EMS agency is required to have an operational medical director, who must meet standards set forth in Virginia code. This code, 12 VAC 5-31-590, is very specific regarding responsibilities of the medical director and conflict between an agency and a medical director. State code also requires a Quality Management Program to be integrated into all areas of operation.

Table 1: A Comparison of Statewide EMS Systems Close to New Jersey

State	Training	Equipment	Medical Direction	Legislation	State Funding
Connecticut	Courses developed and approved by state. Certification, testing, and instruction through state	State inspects vehicles and equipment	State Medical Director advises Medical Directors in hospitals	Governs EMS organizations, provides direction on grants, sets up state trauma system	State funded $1.2 M in 2006, grants of approx. $8.4 M
Delaware	ALS training though Community Colleges & BLS training through State Fire School	State Fire Prevention Commission oversees BLS equipment & apparatus. State EMS Office does same for ALS	Each ALS agency is assigned a Medical Director by the State	Set up as part of Health & Social Service but EMS Oversight Council makes recommendations to Safety & Homeland Security	State provided in excess of $30 M to EMS care in 2005
Maryland	State has 21 certified providers of ALS education, 3 BLS, and 15 for refresher programs.	State inspects and licenses commercial ambulances. No one inspects fire service EMS vehicles	Each region has appointed a Medical Director. Online medical direction is available 24/7	1993 Maryland EMS Law shaped existing structure; has been modified over the years to improve EMS delivery	State provided $10.8 M
Ohio	State certifies instructors and handles accreditation of training facilities. Also oversees state, local, and private firefighter and instructor programs	State provides standards for apparatus and equipment; localities are responsible for compliance	State Medical Director works with Regional Physicians Advisory Board to develop protocols and minimum standards	State Administrative Code 4765 defines purpose, scope, and organization of the agency	State funds $3.2 M, Federal funds $5.9 M. Other grants $9.3 M. Seatbelt fines $5 M
Virginia	State accredits training programs. Training available through state, regional councils, & private entities	All vehicles providing EMS are certified by State	Each EMS agency is responsible for hiring a Medical Director.	EMS is a part of Health Department, as is Emergency Preparedness & Response; separate from Fire Programs	State OEMS received $2.5 M in FY2007, each of 11 regional councils unequally divided $2.9 based on services provided.
New Jersey	State accredits training programs. Training available through various organizations. ALS training at four community colleges	All ALS and licensed BLS vehicles are certified by the state. Equipment for ALS specified in regulations.	Commissioner of Health is responsible for EMS. No specific state EMS medical director. ALS programs and licensed BLS programs have medical directors	State Legislation and Regulations govern administrative and operational regulations	State receives funding from Treasury, UASI and other federal monies. Funding for BLS training from traffic citations (indirect)

Funding for the OEMS in Virginia comes from the state and is divided between two groups. In FY 2007, the State OEMS received $2,538,678. Each Regional EMS Council received a share of $2,954,934 that was split between the eleven councils. This sum was divided based on the services provided by each council and was not equal across all councils. Grants through both state and federal sources are also used to fund OEMS and the operational EMS units in localities.

Comparison of State Systems

Comparison of the New Jersey State EMS System to five states of similar size or population, found two distinct differences; New Jersey has no state EMS medical director and New Jersey does not have a regional EMS system within the state. Another important difference is that in the sample states, local municipalities have legal responsibility for the provision of EMS. These issues will be discussed extensively throughout the document with direct recommendations for actions. While the differences appear simple, they are having a profound effect on how EMS operates in New Jersey. For example, a lack of statewide medical direction leads to fragmentation of EMS medical oversight. Most ALS programs have excellent medical direction while BLS programs have little to none. Lack of regionalization constrains the OEMS to manage all regulatory and oversight responsibilities from Trenton. While statewide uniformity is desirable, no state system can be exactly the same. The northern part of New Jersey has a different geography and population density than southern New Jersey. The state can maintain proper oversight while allowing for some regional uniqueness. The lack of legal obligation for municipalities to provide EMS is bewildering at best. Combined with “home-rule” authority, this challenges providing EMS based on economies of scale and limits the NJOEMS from overseeing operational situations except by way of strict regulation that demands lock-step conformity.

The EMS systems selected for comparison were not selected because they present the perfect model. To the contrary, some have had significant weaknesses that have led to their own crisis levels. In the 1990s, Connecticut’s EMS system faced a total collapse that required significant crisis management. Delaware was one of the last states to provide ALS, but in the last decade has become an exemplar EMS system. These states have experienced challenges and changes that have helped them grow. Their experiences may be helpful to New Jersey.

Conclusion

No two of the comparison jurisdictions use the same structure or policies in the delivery of EMS to the public. Different needs, different growth patterns, and different political pressure are only a sample of the factors that result in significantly different systems providing an essential service to the public. Interjurisdictional comparisons are useful in identifying

techniques and ideas that are successful elsewhere. Ultimately, decisions must be based on specific needs and resource availability in the State of New Jersey.

Chapter Four looks at the legislative issues involving EMS in New Jersey. This chapter introduces and compares comparable state EMS systems. Subsequent chapters will explain in detail the current state EMS system and suggestions for modifications that can be successfully adapted from existing practices in other jurisdictions. New Jersey EMS has many strengths that have provided its citizens with good prehospital care. This evaluation will continue to provide guidance for NJ EMS.

III. EMS SYSTEM ASSESSMENT

This chapter presents an assessment of the New Jersey EMS System based on the responses of 13 EMS Focus Groups representing New Jersey EMS organizations and EMS provider groups. The assessment is divided into two major sections, a current assessment of New Jersey EMS and priorities for the future of EMS. The DOT/NHTSA EMS "Agenda for the Future" was used as a basis for this assessment. Specific methods used for the assessment were discussed in Chapter 1. This assessment considered all aspects of EMS in the state, not just NJOEMS.

The assessment includes information identified during the focus groups, triage visit, and interviews we conducted throughout the state.

Current State of EMS System

Overall Evaluation – The overall evaluation is based on a compilation of the assessment of each component of EMS by all of the focus groups. An explanation of each component will be provided in the discussion of each component.

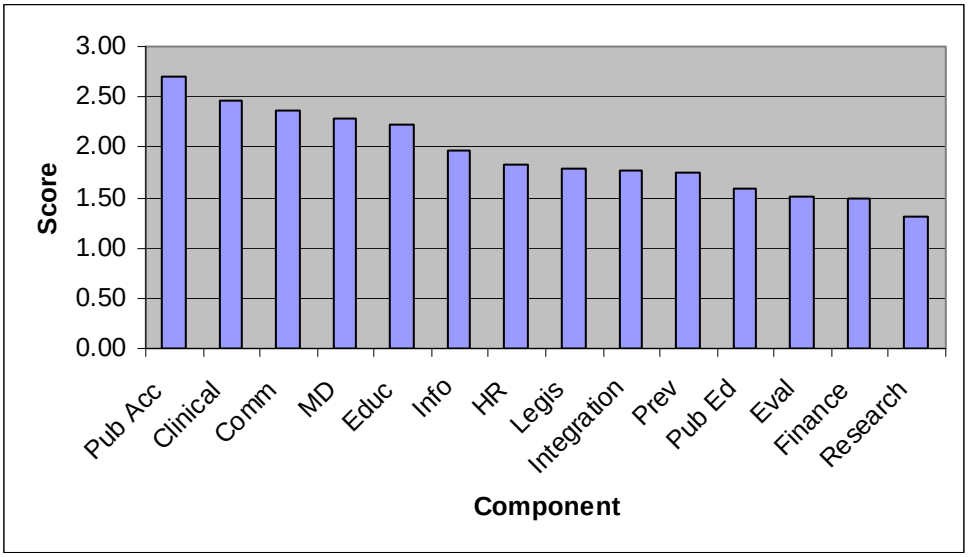
The scoring for each component is:

- ***Excellent (5)*** – NJEMS has already achieved the Agenda for the Future attribute.
- ***Very Good (4)*** – NJEMS has either achieved or has plans to achieve the Agenda for the Future attribute.
- ***Satisfactory (3)*** – NJEMS has minimally achieved most of the Agenda for the Future attribute. A specific plan is needed to complete this attribute.
- ***Marginal (2)*** – NJEMS has recognized what is needed to achieve the Agenda for the Future guidelines but does not have a plan of action.
- ***Unsatisfactory (1)*** – NJEMS has not recognized this Agenda for the Future attribute as part of the EMS system.

A score of 0.5 or higher above the base score was moved to the next level. For example, a score of 1.75 would be considered *marginal.*

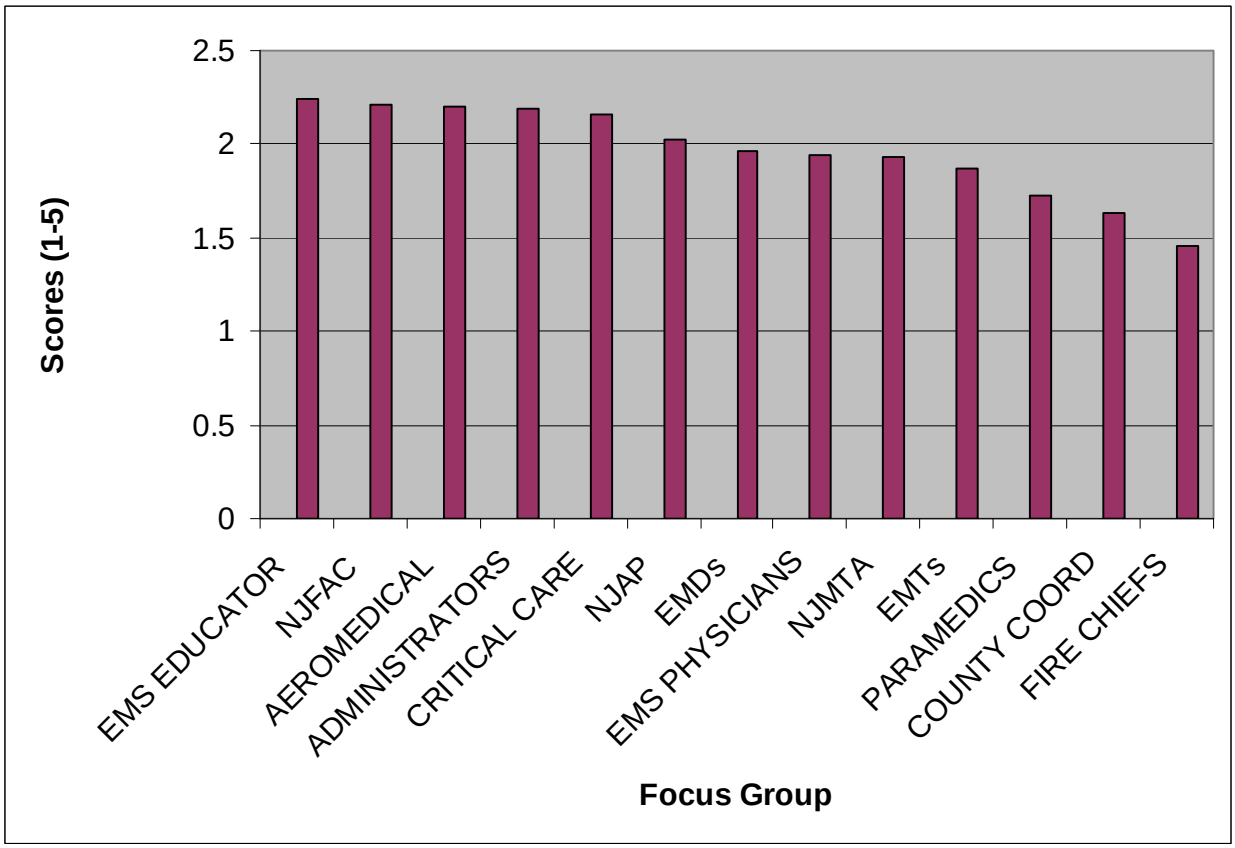
Overall, the New Jersey EMS system was scored as *marginal, w*ith a score of 1.93 out of 5.0. The strongest component was Public Access (2.69-*emerging*). Components higher than *marginal* were clinical care (2.46), communications (2.37), medical direction (2.28), and education systems (2.22). Components scored below 2.0, were finance and EMS research, they were considered as *unsatisfactory* (Figure 2).

Figure 2: Scores by EMS Component



The overall scores by focus group had a range of 1.46 to 2.24, with the mean being 1.96. All groups scored EMS in the *marginal* range except for the fire chiefs who scored EMS 1.46, *unsatisfactory*. The highest scores were assigned by the EMS educators (2.24), air medical providers (2.21), and the New Jersey State First Aid Council (2.2) (Figure 3).

Figure 3: Overall Scores by Focus Groups



The distribution of scores revealed that M = 1.96, SD = 0.24. The above data indicate that any identified strengths or weakness are likely to be system-wide issues. We also evaluated each component separately.

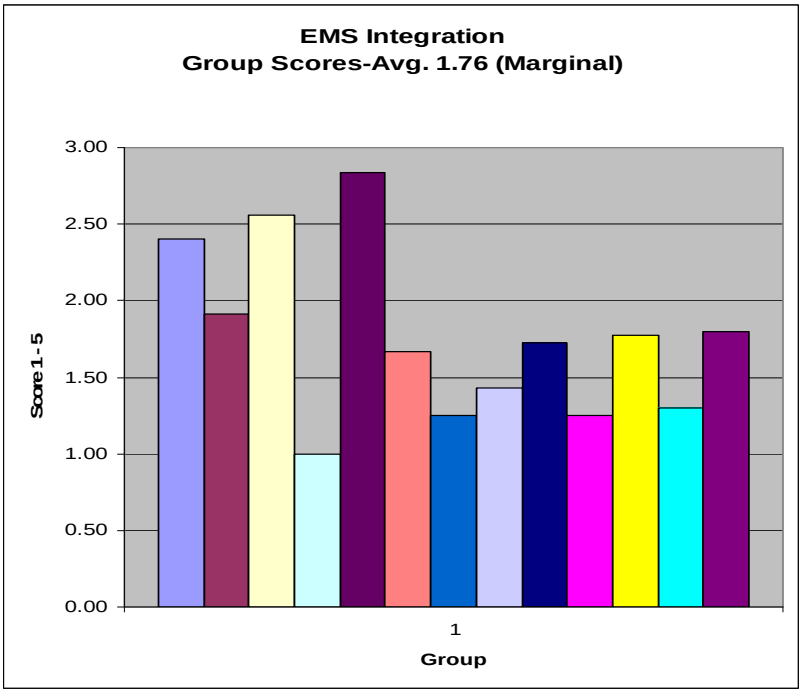
Integration of Health Services – The current EMS delivery model in New Jersey and across the United States calls for EMS to respond to out-of-hospital emergencies, render care, and deliver the patient to the nearest appropriate emergency department. While this model has guided the system for years, increased costs, less access, and better knowledge of patient care needs requires its reevaluation. Taking every patient to an emergency department may be as much of a detriment to patients as it is an advantage.

The average group score for this component was M = 1.75, SD = 0.55 which is considered *marginal*. Issues raised by the groups included:

- Inflexibility in protocols and delivery methods. Patients must be transported to an emergency department. There is no consideration for alternative destinations.
- The scope of practice for both ALS and BLS providers is very restrictive.

- Legislation prohibits EMS providers from practicing their skills in hospital or other system delivery models.
- Healthcare payors do not reimburse for non-transport activities except for cardiopulmonary arrest cases. [24]

Figure 4: Focus Group Score on Integration into Healthcare



EMS Research – In order to determine the efficiency and effectiveness of EMS care, the EMS community must engage in the pursuit of scientific validation of their efforts. Ultimately, this is the primary way to improve care and allocations of resources.[25] The focus group identified EMS Research as one of the weakest areas of New Jersey's EMS system. The weaknesses identified are similar to those identified at the national level:

- Lack of integrated information systems that link with outcome data
- Few academic research institutions with a long-term commitment to EMS research
- Overly restrictive informed consent interpretations
- Lack of education and appreciation by EMS personnel regarding the importance of EMS research

[24] Legislation
[25] NHTSA. (1996). *Emergency Medical Services Agenda for the Future.* Washington, DC: United States Department of Transportation, p. 13.

This is especially significant in New Jersey, where legislation and regulation prohibit prospective EMS research and impose significant restrictions on other types of EMS research. With several leading academic medical institutions located in New Jersey, there is potential to produce seminal EMS research that could affect EMS nationwide. Another issue is the lack of a clearinghouse for EMS research within the state. The NJOEMS is not sufficiently staffed to provide this service.

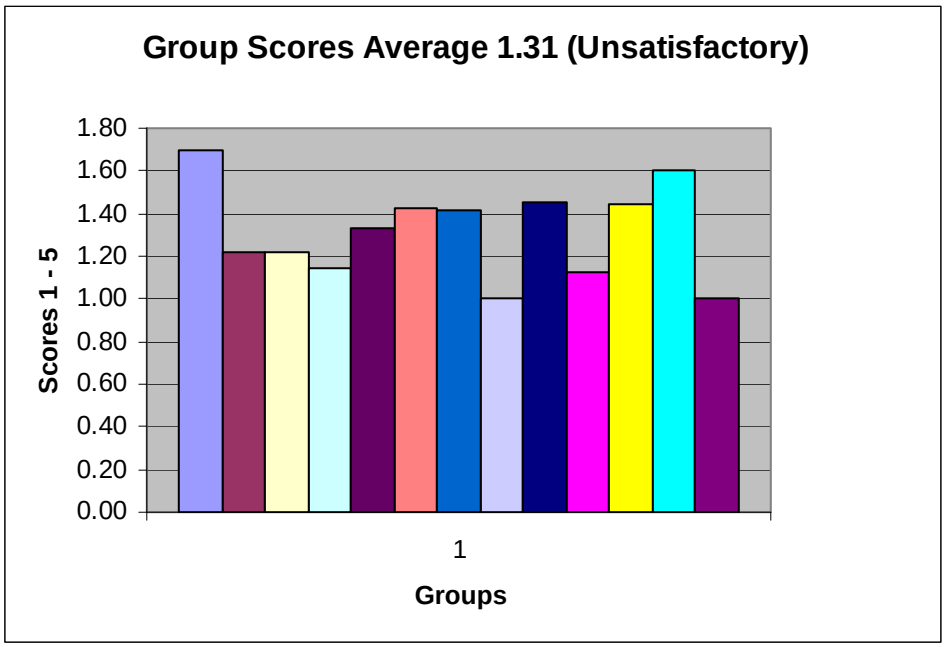
In 2001, NHTSA published the National EMS Research Agenda that included eight major recommendations, all appropriate for New Jersey to consider:

1. Development of a cadre of EMS researchers who possess the educational pre-requisites and experience to develop EMS research methodologies and models. This includes post-doctoral MD and PhD fellowship programs that include funding for EMS research.
2. A Center for Excellence should be developed specific to EMS Research that should be funded by a combination of federal, state, and private entities. In New Jersey, the OEMS would be an appropriate center for research coordination.
3. Federal and state agencies should acknowledge their commitment to EMS research. This includes the funding of controlled clinical trials.
4. States should take the responsibility to work with corporations and charitable foundations to encourage and support EMS research.
5. Every constituent in the EMS community must support and apply the results of EMS research.
6. EMS providers at all levels should subscribe to the need for evidence-based medicine as a prerequisite for implementing new policies or interventions.
7. There should be standardized data collection methods at all levels of EMS. States should require reporting of data by all entities and should submit this data to a national database.
8. The Food and Drug Administration and the Office for Human Research Protection should work with EMS researchers to develop policies to reduce the impediments for implied consent.[26]

[26] NHTSA. (2001). National EMS Research Agenda. Washington, DC: Department of Transportation, pp. 7-10.

The focus groups scoring resulted in a Mean = 1.31, SD = 0.22, one of only two components that was rated *unsatisfactory*.

Figure 5: Scores for EMS Research



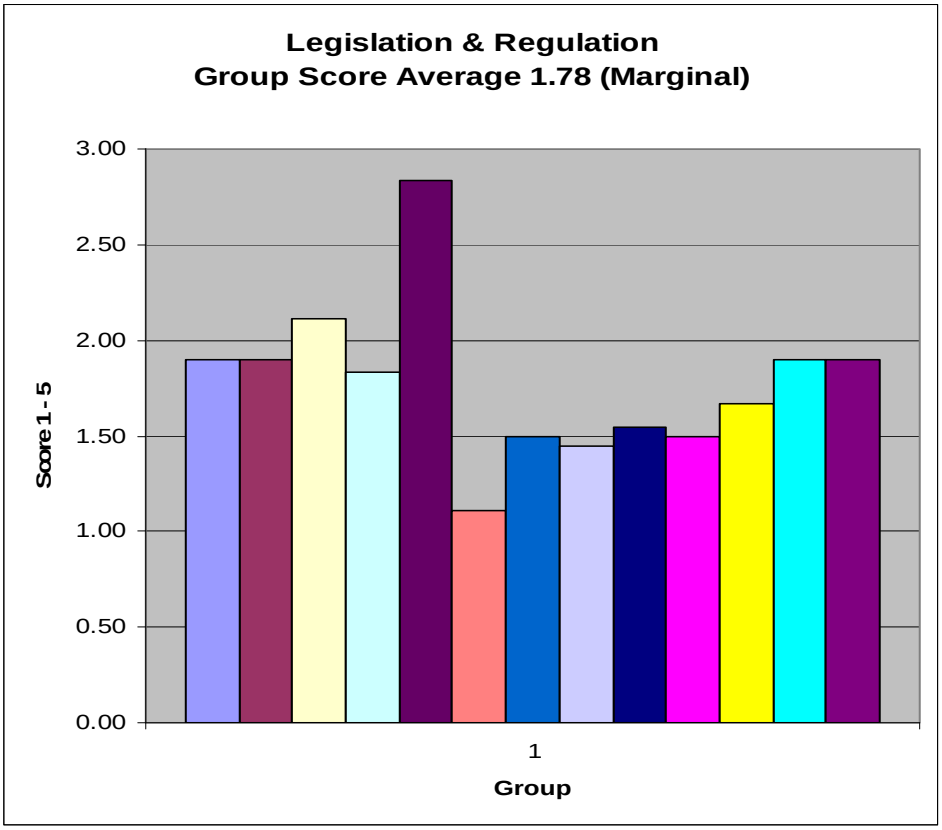
Legislation and Regulation – This topic was intensely discussed by each focus group. It was one of the most controversial topics as some focus groups had very specific agendas. Nevertheless, there appeared to be consensus on several weaknesses that need to be addressed.

- The current legislation has outlived its usefulness. Legislation should be enabling.
- The current legislation lacks a comprehensive focus and is too restrictive.
- Medical protocols must be removed from regulations.
- There must be a streamlined process for changes in the regulations.
- NJOEMS is not empowered to provide the needed oversight.

A later chapter in this report will permit identifying suggestions for changes to the current legislation, regulation, and oversight.

The focus group score was M = 1.74, SD = 0.41, which is considered *marginal* (Figure 6).

Figure 6: Scores for Legislation and Regulation



System Finance – The topic that generated the most conversation, debate, and frustration within the focus groups was financing of EMS. Reduced compensation from insurance carriers, especially Medicare and Medicaid, has precipitated concern and even crisis in some EMS circles. This is particularly true among non-transport ALS programs who have shouldered a major part of this burden.

Another major issue is the funding that is not collected by NJFAC and non-affiliated volunteer programs. Several focus groups felt that this unclaimed money could be used to support the state EMS system. There was considerable discussion about the complexities of financing such as the need for separate agreements between hospital-based ALS units and each squad they provide services.

Their financial issues are neither local nor New Jersey specific. National EMS agendas continue to address them and recommend the following actions:

- Development of proactive relationships between EMS and other healthcare providers and healthcare payors.
- Compensate EMS based on preparedness instead of volume-based incentives.

- Consider other compensation models that do not require transportation for compensation.
- Addressing EMS relevant issues within government healthcare policy.[27]

Recently, the U.S. General Administration Office (GAO) determined that Medicare/Medicaid reimbursement rates were insufficient. The average reimbursement rate caused EMS transportation providers to operate at 6 -17 percent below the break-even point.[28] The American Ambulance Association (AAA) supported the GAO finding and said that Medicare payments were 8 percent below the break-even point for their organizations.[29]

Air Medical EMS financing was another topic of contention. There is competition between private services and JEMSTAR (New Jersey State Police) programs as to who can run a more efficient and effective service. (This is explored in-depth in the JEMSTAR chapter.)

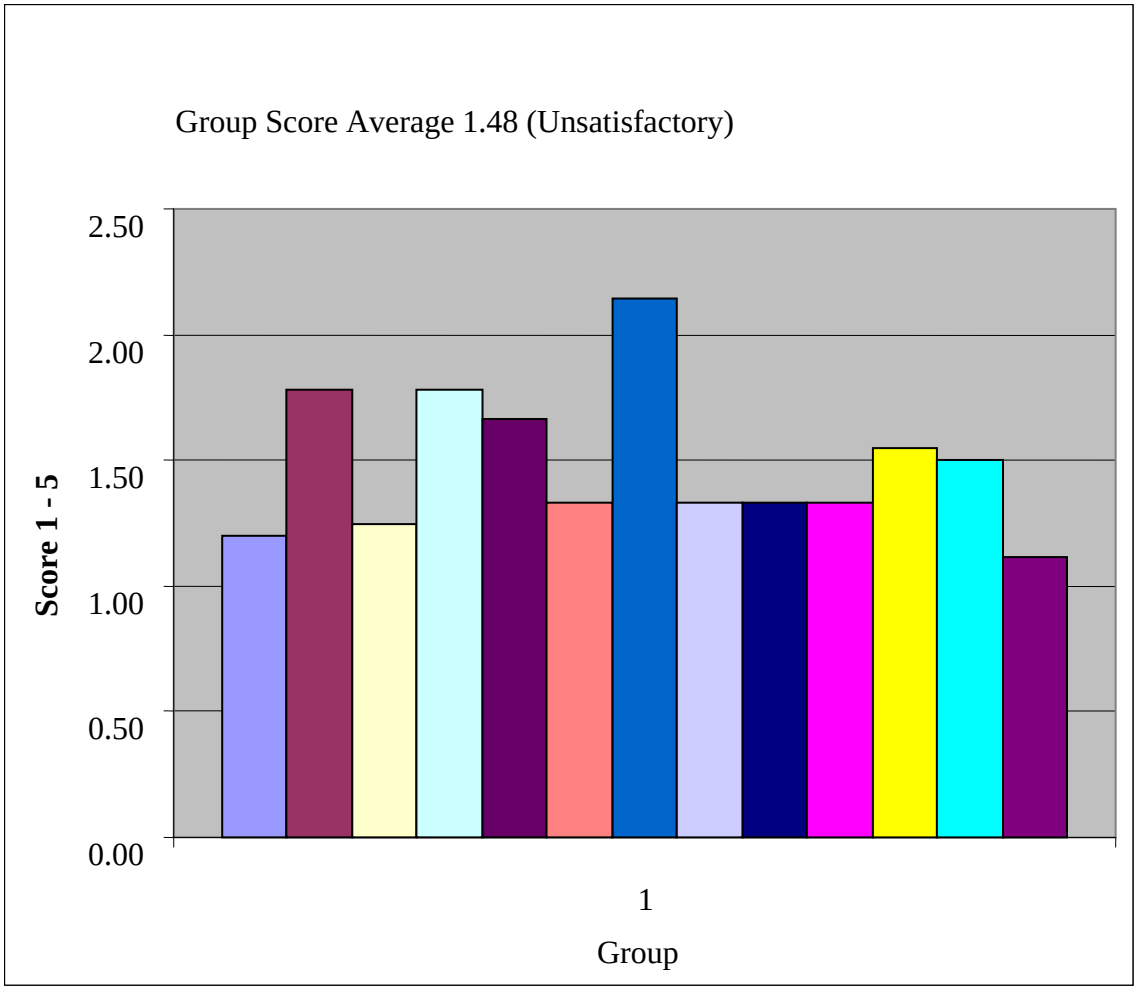
Two related financial concerns are the New Jersey State Police Helicopter Fund and the New Jersey Training Fund. An amount of $3.00 from every car registration goes into a fund for the two New Jersey State Police helicopters that provide air medical transportation and pilots. Some of this fund is also used to partially finance the medical portion of the program (JEMSTAR). EMS providers and organizations are concerned that this system may be inefficient and very little funding is used for the EMS portion. The hospitals supplying medical personnel claim that the fixed rate of $1,337 is far below the break even point.

The EMS Training fund is identified in legislation allowing for reimbursement of volunteers for EMT training and continuing education. It is funded by traffic citations; 50 cents of each moving violation fine is targeted to this fund. Some focus group members question how the funding is being spent while others are concerned about its limited use. JEMSTAR and the Training Fund will be discussed in detail in other sections of the report.

The focus groups scored this component at M = 1.48, SD = 0.29. This and EMS Research were the only two components that received *unsatisfactory* evaluations (Figure 7).

[27] NHTSA, 1996, p. 22.
[28] GAO. (2007). *Ambulance Providers: Costs and Expected Medicare Margins Vary Greatly*. Report to Congressional Committees (GAO-07-383)
[29] AAA (May, 2007). *GAO Report Confirms Medicare Ambulance Payments Are Below Average Cost Per Transport.* Available: [Online]. www.the-aaa.org.

Figure 7: Scores for System Finance



Human Resources The biggest challenge facing many organizations is human resources. In some organizations, the challenge is numbers of people, in others it is human relations skills, or both. While this may appear logical, the human resource issues of both are closer than anticipated.

One common issue between career and volunteer agencies is staffing. Career services struggle with determining how many personnel are needed to provide quality service within a reasonable budget. Volunteer services have the same struggle, but also where can we find them.

Common themes identified by most focus groups included:

- Hospital-based EMS workers lack the pension and benefits of their public service counterparts.

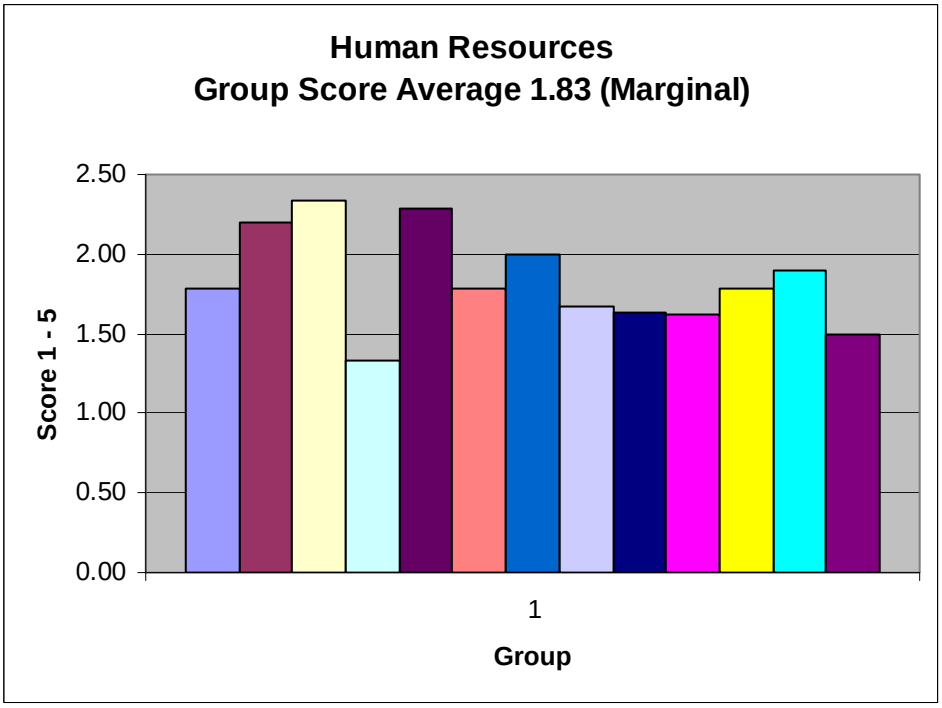
- Public safety EMS providers (unless they are dual-role/cross trained) have lower pension benefits than firefighter and police counterparts.
- Fewer people in our communities are willing to volunteer today than in earlier years. This is due to culture, economics, and technological reasons.
- Fewer people are choosing to attend EMT and Paramedic training, meaning that fewer are seeking careers in EMS.

Regardless of the reason, human capital is a challenge that many feel is at a crisis point. Hospital-based ALS units are realizing certain phenomena that were unpredicted or ignored. First, third-party payors are paying less for EMS service, with the result that some services who accept government insurance, such as Medicare, may be operating at a loss. Second, healthcare system media (advertising) pays little attention to EMS. Advertisements in property and home sales booklets and vacation/leisure books usually feature in-hospital cardiac care, stroke care, and other specialty services. In our experience, none of these advertisements mention the hospital-based ALS unit or included EMS providers in pictures. Third, healthcare administrators used to look to hospital-based ALS units to assist with patient catchment. With the increased sophistication of EMS systems, standing orders and protocols or usually patient requests dictate transportation destinations. This may reduce the need to use an ALS-unit as a tool for catchment. Fourth, the first generation of ALS providers is reaching retirement. Most hospital-based providers do not have pensions that will allow them to stop working. 401K type programs are helpful but generally insufficient. Compare this situation to the local firefighter or police officer with less education but having a reasonable pension. Unfortunately, most hospitals are unable to offer these types of benefit packages to any worker.

This all should alarm the EMS community into taking immediate action. Hospitals are considering whether to continue their EMS programs. Recently, one hospital in northern New Jersey was advised by a consultant to terminate their ALS program and place it into the hands of local government.

The focus groups scored this component M = 1.83, SD = 0.3, indicating a rating of *marginal* (Figure 8).

Figure 8: Scores for Human Resources

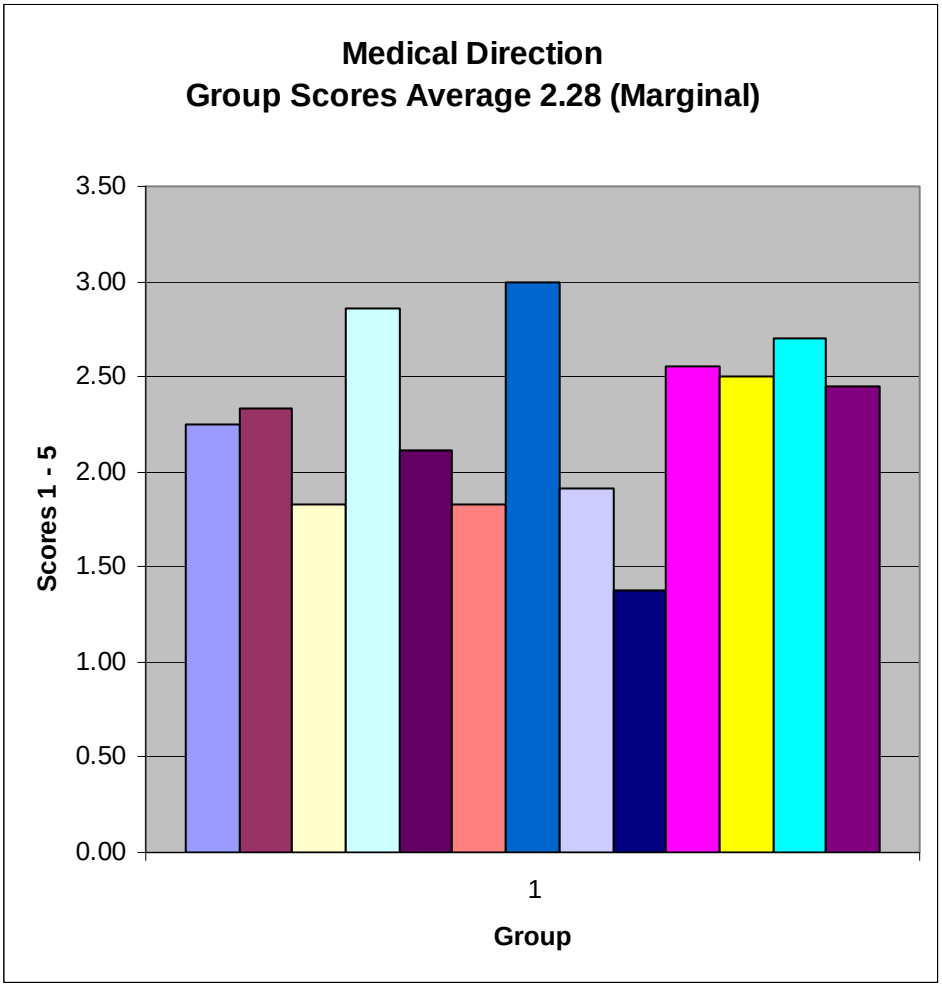


Medical Direction – Many felt that a quality paradox exists in NJEMS medical direction. At the ALS level, physicians exert significant oversight into the operations, education, and quality management of EMS providers. BLS level medical direction is just the opposite with little direct physician involvement at the local level. Licensed BLS companies are required to have medical directors, however, the level of activity of the medical directors varies greatly. The 507 volunteer squads in New Jersey are not required to have medical directors unless they participate in an optional program such as epinephrine-auto injector.

Other medical direction issues raised by the focus groups included New Jersey not having a statewide medical director, poor oversight of physicians wanting to be involved in EMS, and not having a hierarchical system of medical direction throughout the state. The most organized aspect of medical direction is the NJ Mobile Intensive Council that communicates their concerns to the Health Commissioner, State EMS Director, and other EMS administrators. This committee has many experienced EMS physician participants who appear frustrated by legislative and regulatory roadblocks.

The focus groups scored this component M = 2.28, SD = 0.46, indicating a rating of *marginal* (Figure 9).

Figure 9: Scores for Medical Direction



Education Systems – The focus group participants had varying views of EMS education in New Jersey. Most of the groups had significant concerns with the New Jersey EMT Training Fund and its limitations. Paramedic, fire service, and commercial EMS career providers felt that it was unfair that the fund was restricted to volunteers whose organizations are not required to follow licensing rules. In contrast, volunteer participants were concerned that expanding access to the fund would create insufficient funding for the volunteers, thereby negatively affecting recruitment and retention efforts.

Another issue that provoked concern was the quality of continuing education programs for BLS providers. Agencies that provide EMT-B continuing education are paid $5.00 per continuing education hour per fund eligible student. Participants were concerned that this has created a “cottage industry” for EMT continuing education without quality management. NJOEMS does not have the staff to provide sufficient quality oversight to these programs. Therefore, program quality is inconsistent.

One focus group mentioned the lack of EMS education programs available to communities with significant minority and immigrant populations. Information from specific communities was not presented, but community colleges and technical schools already have requirements and programs for access to these populations. More attention should be paid to this situation.

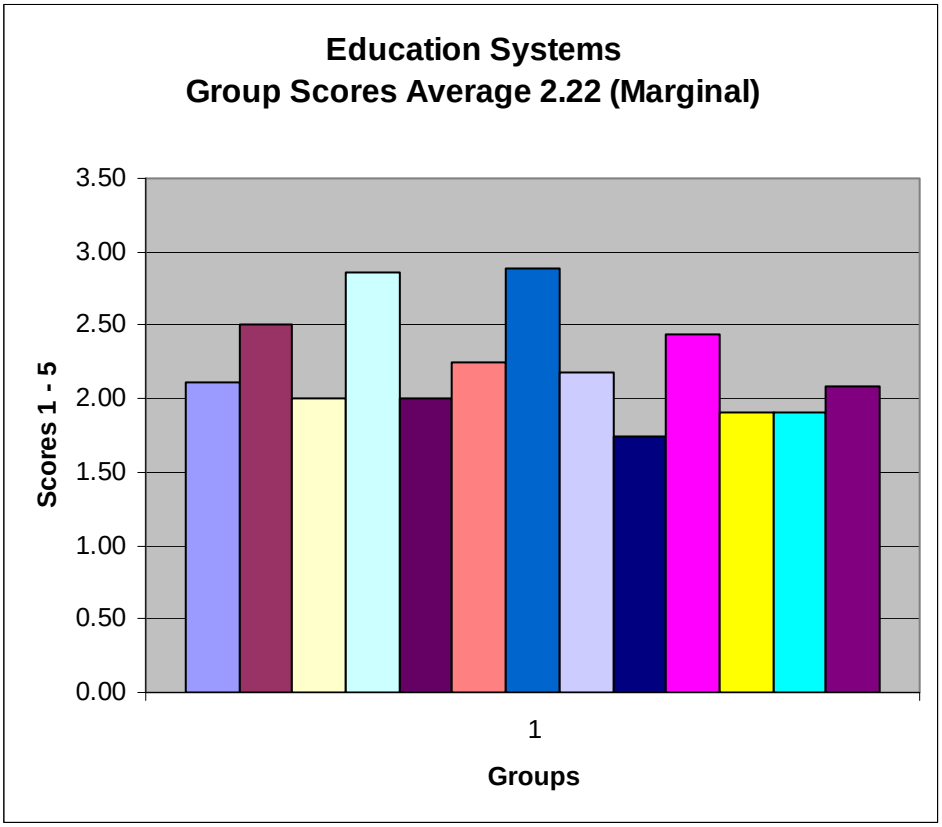
Another issue discussed was the recent decision to drop the National Registry of EMTs EMT-Basic examination and return to the Mid-Atlantic Regional EMT-B testing program. On January 2, 2007, the National Registry began its transition into computer-based testing for the didactic portion of EMT-B. After completing the EMT-B program, candidates report to an authorized testing site and take the computer-based test. Test results are usually available within 24-hours.[30] NJOEMS officials and NJSFAC leaders had two main concerns, cost and accessibility. Each exam costs approximately $70 and there are only five test sites statewide. The National Registry and NJOEMS have attempted to resolve this but to no avail. The Mid-Atlantic examination is acceptable and psychometrically sound, but there are bigger issues to consider. The National EMS Scope of Practice Act has identified a four-part framework, each having an interdependent relationship with the others. The basis of EMS practice should be education, certification, licensure, and credentialing. Certification is an external verification of competencies that involves an examination to determine minimal competency. Other medical professions have a national certification board that has developed a nationally recognized examination. The issue in New Jersey hinders the adopting of the National Scope of Practice.[31]

ALS training is delivered by one of four community colleges throughout the state. Focus group members believe that this is adequate but that it should not restrict other interested institutions. Another issue concerned difficulties with reciprocity between states.

The focus group scored this component M = 2.22, SD = 0.36, that is considered *marginal* (Figure 10).

[30] NREMT. (2007). *The Registry: The Newsletter of the National Registry of Emergency Medical Technicians.* Spring, 2007, p. 1.
[31] NHTSA (2005). *The National EMS Scope of Practice Model*. Washington, DC: Department of Transportation/National Highway Traffic Safety Administration.

Figure 10: Scores for Education Systems

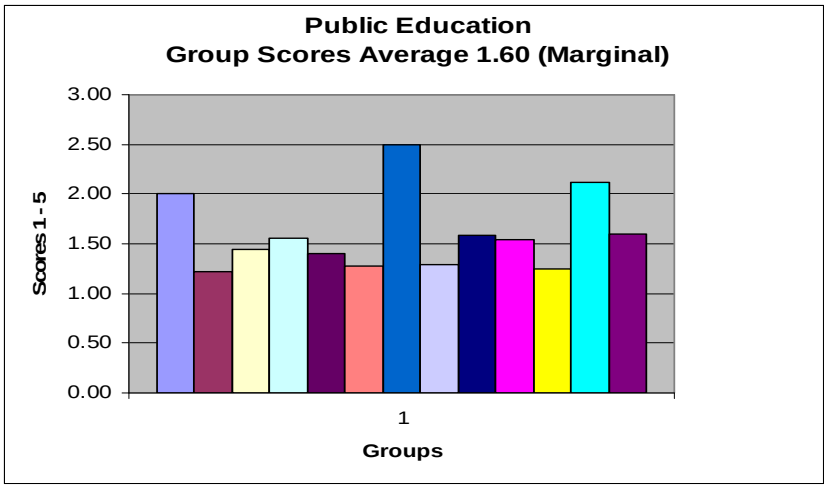


Public Education – Many focus group members felt that the lack of public education is a missed opportunity. EMS providers are one of the most trusted people in our society. This gives EMS systems power to use this community standing positively; for the patient, for the system, and for the EMS provider. Unfortunately, during human resource and financial shortages, these activities are the first to be eliminated.

There are some shining examples of public education throughout the state. EMS-C grants have provided communities with childhood injury and illness prevention programs.

The focus groups scored this component M = 1.60, SD = 0.38 that is considered *marginal* (Figure 11).

Figure 11: Scores for Public Education



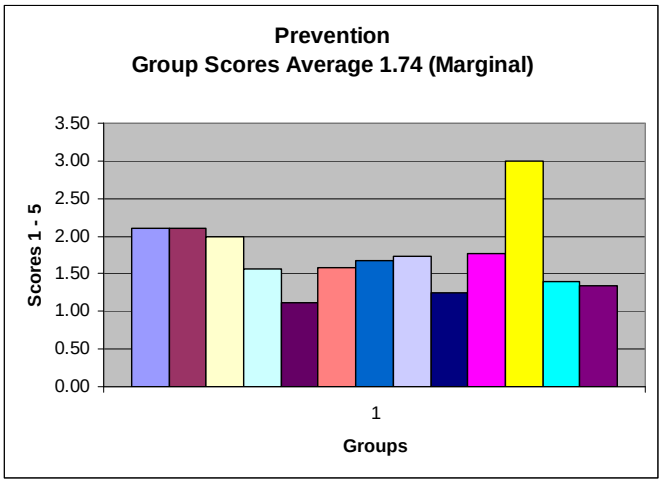
Prevention – In the future the success of EMS systems will be measured not only by the results of their treatments, but also by the results of their prevention efforts.[32] Based on this precept, the focus groups examined the issues of prevention in EMS. Some groups concentrated on public protection issues while others emphasized EMS provider illness and injury prevention.

As with other non-operational components, many lamented that these activities are often victims to budget and human resource crisis. Also discussed was the need for medical directors to be involved in this process. Are our prevention methods as sound as our treatment protocols? There is also very little evidence of outcome measurement of EMS delivered prevention activities.

The focus groups scored this component M = 1.74, SD = 0.49, that is in the *marginal* range (Figure 12).

[32] Delbridge, T. R. in NHTSA, 1996, p. 35.

Figure 12: Scores for Prevention



Public Access – Until recently, public access to EMS was measured by what percentage of the community could access emergency services by dialing 911. By 1996, almost 85 percent of Americans had 911 access and today's figures are likely to be well into the 90–95 percent range. New Jersey has had 100 percent 911 access for some time.

For this study, public access takes on a larger dimension, not just access to 911 but also access to any part of the EMS system that the patient needs. This includes access to a trained emergency medical dispatcher on the initial call, access to the closest appropriate unit available, direct access to appropriate medical and surgical specialty centers, and access to alternative care programs. Public access challenges also include technological expansion such as cell phone access, computer access, the future of remote access, and incorporating patient access assist devices (call alert) into the community EMS system.

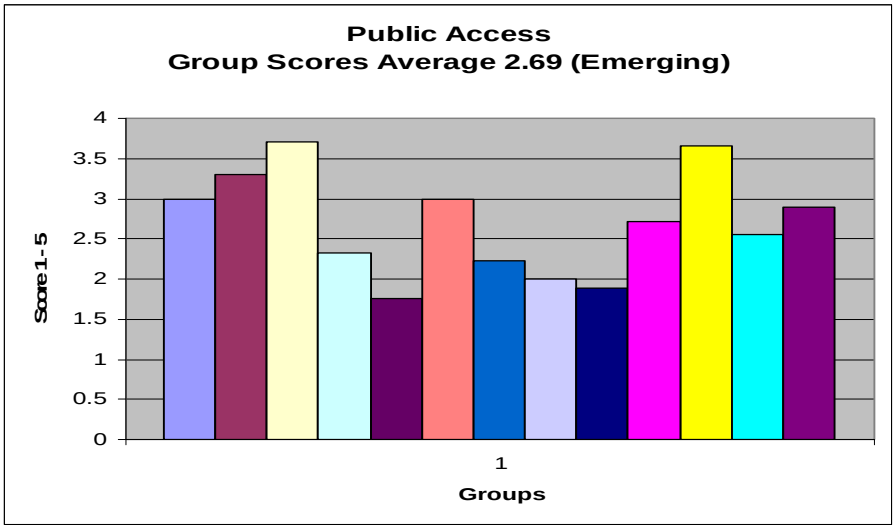
Another aspect that cannot be ignored deals with cultural and demographic changes. As in many states, many New Jersey communities are experiencing an influx of residents for whom English is not their primary language. This challenge is worrisome as an oral communications barrier could lead to delayed response and has already occurred in some cases.

Another post-9/11, challenge to public access is accessibility to directions and care during chemical, biological, radiological, and nuclear explosive (CBRNE) and other natural and manmade incidents. Public access has really become multi-directional as there are new obligations concerning emergency management and EMS. Technologies including AVL locaters, reverse 911, and similar programs have become important matters within public access.

Overall, the focus groups scored this component M = 2.69, SD = 0.69, indicating a rating of *emerging*. This component received the highest rating of all components. A standard deviation

of 0.69 is worth commenting about. This is greater than other components, indicating that there may be geographical or other variables that affected the scoring.

Figure 13: Scores for Public Access



Communication Systems – The operative word in this component is system as the current state of EMS communications in New Jersey suffers from what academics call "reductionism." This occurs when the leadership views the system as the sum of its individual parts instead of each part making all other parts greater: synergism. There are areas where there is superb technology, but only a small area benefits from it, while other areas work with archaic technologies that negatively affect large areas.

New Jersey is beginning to firmly address this issue. In May 2007, the New Jersey Legislature passed and Governor Corzine signed legislation requiring each of New Jersey's 21 counties to develop countywide 911 primary access points. This is an excellent start, but must continue to evolve into county-level primary dispatch points. This has come to fruition in southern New Jersey, but it has not yet permeated the northern parts of the state. In many areas, small communications centers staffed by one police officer or dispatcher provide dispatch service to one town.

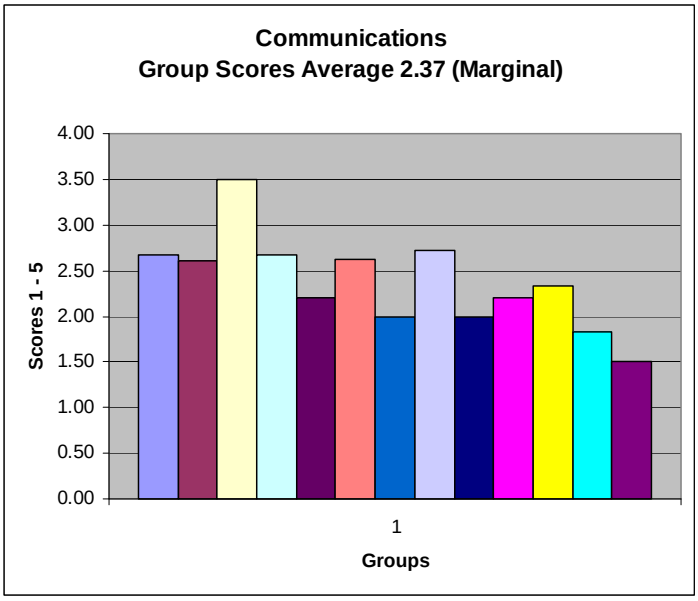
A profound example of the above involves a northern New Jersey ALS unit that was required to install seven different radios so all of their response area could be serviced (Figure 14).

Figure 14: MICU with several antennas

Figure 15: Seven Radios in One Unit

The focus groups scored this component M = 2.37, SD = 0.51 indicating a *marginal* rating (Figure 16).

Figure 16: Scores for Communication Systems

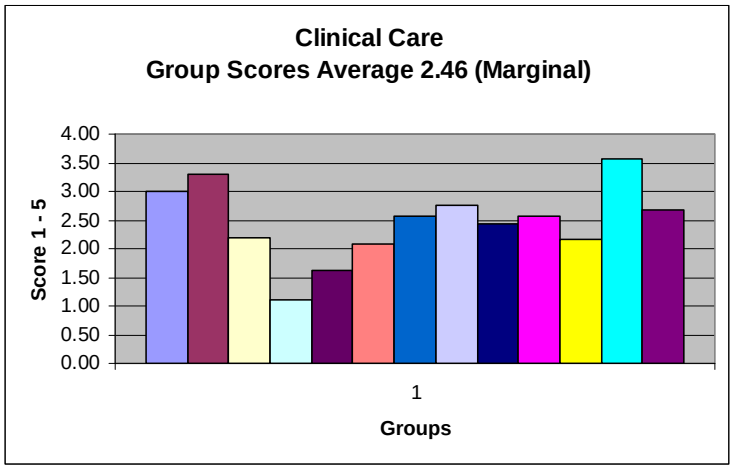


Clinical Care: The type and quality of EMS care being provided to New Jersey residents and visitors was the overriding factor for all discussions. There is a consensus that ALS care in New Jersey is superior and that having a small contingent of paramedics is a key element of this success. In comparison, the perception of BLS-level care is that there are pockets of excellence and areas where care may not be adequate.

One area of consensus was that the state regulations focused on technical materials instead of system integration. This leads to overregulation that reduces quality by restricting EMS programs from providing the highest levels of care.

The focus group scored this component M = 2.46, SD = 0.66, which is considered *marginal*. As with some components, the larger standard deviation indicates a larger paradox of scores. This is likely due to geographic differences and some participants being primary ALS providers and some exclusive BLS providers.

Figure 17: Scores for Clinical Care

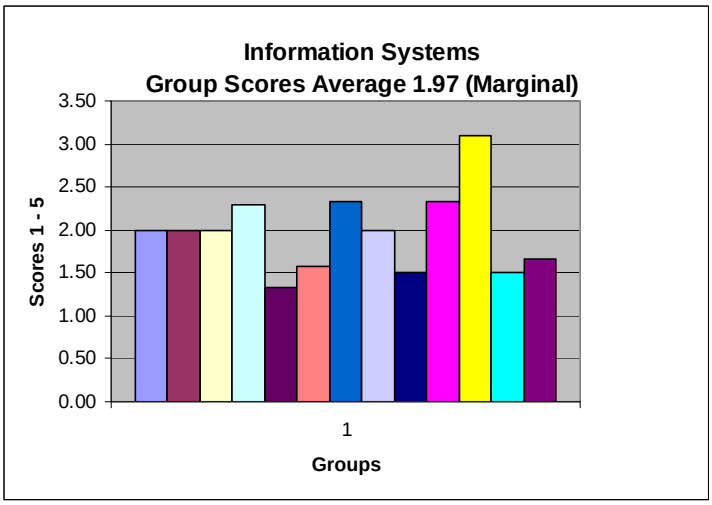


Information Systems – The ability to obtain, store, and analyze information is one of the most critical elements of a successful EMS system. Finding crucial information is likely the foundation of the future of EMS. Healthcare systems are beginning to integrate medical records into an accessible database that links with all appropriate elements of the healthcare system. EMS is beginning to recognize the importance of data and the ability to collect, analyze, and store large amounts of data.

New Jersey is especially challenged by this component as it is far behind many other states. Currently, there are no statewide EMS patient care reports, volunteer BLS units are not required to complete PCRs, licensed agencies report only aggregate data, and dispatch centers are not required to provide or report response-time data.

The focus groups scored this component M = 1.97, SD = 0.48, which is considered *marginal* (Figure 18).

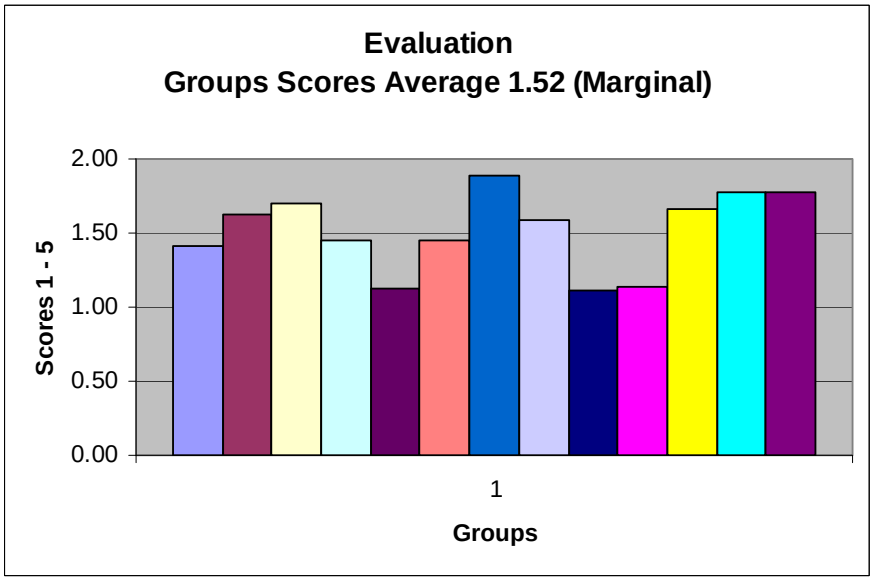
Figure 18: Scores for Information Systems



Evaluation – To determine if the EMS system is performing appropriately, continuous evaluation is essential. This includes administrative, clinical, educational, and information systems. These evaluations should be continuous with comprehensive evaluations occurring every five years.

The focus groups scored this component M = 1.52, SD = 0.26, which is considered *marginal* (Figure 19).

Figure 19: Scores for Evaluation



Overall, the focus groups evaluated the general status of EMS in New Jersey as *marginal*.

Identification of Top Priorities

After the focus groups finished the initial evaluation of each element of EMS, they began to identify and prioritize issues for each component. Below are their priorities. We include some additional information discovered by TriData. Recommendations regarding air medical EMS, legislation and regulation, ALS delivery, and the EMS workforce are contained in separate chapters.

EMS System Integration – The focus groups identified 30 recommendations, with the top six as the following:

1. ***Scope of practice expansion*** – Paramedics and EMTs should be able to practice additional skills in different healthcare settings. This includes hospitals, freestanding emergency centers, physician offices, mass gathering sites, and similar situations.
2. ***Municipal recognition of 911, emergency management, public safety*** – Municipalities should recognize that 911 and emergency management are integral parts of public safety.
3. ***Better hospital/EMS interface*** – Better communications between EMS and other healthcare agencies will help integrate information systems, best practices, and public health needs. This would allow the healthcare system to determine the best fit for EMS.
4. ***Recognize EMS as a public safety element*** – Municipalities must recognize EMS as an essential element of public safety similar to fire services and law enforcement.
5. ***Oversight of system integration*** – NJOEMS should oversee all aspects of system integration including expanded scope of service or practice,
6. ***Alternative treatment paths*** – The current delivery model of taking all patients to an emergency department is outdated, costly, and may not provide the best care. Mechanisms should be introduced to divert certain 911 calls to alternate answering points. EMS providers should be empowered to transport or refer patients to more appropriate facilities instead of just the emergency department.

Each of these issues is appropriate to consider. Many will be developed further in different sections of the report. The issue of alternative pathways is critical in light of healthcare access and economics. In the 1980s, Pinellas County, FL studied their community to determine what their citizens wanted from EMS. They determined four specific needs:

- If I'm dying, save me quickly!
- If not, can you make sure everything is OK or take care of it here?
- If not, can you take me to the right place?
- Please don't financially devastate me![33]

The New Jersey EMS system appears to do well with the first need and is somewhat effective with the third need. It does not address the other needs. This is where New Jersey must seriously consider identifying strategic initiatives and seeing them through.

Recommendation 1: NJOEMS and the NJ EMS Council should study and identify alternative access and treatment pathways for EMS providers to follow. This includes, but is not limited to, treat and release and transportation to alternative treatment facilities.

EMS Research – This was one of two areas that the focus groups rated *unsatisfactory*. The focus groups discussed 21 possible recommendations with the top five being:

1. ***OEMS Research Center*** – OEMS should serve as a clearinghouse for EMS research
2. ***State standard EMS data collection system*** – see information systems
3. ***Identify funding resources*** – this includes public, university, and private sources
4. ***Evidence-based practice and protocol*** – ALS and BLS protocols should be research based.
5. ***Regulations should facilitate EMS Research*** – Laws and regulations should promote instead of restrict EMS research. NJOEMS, the EMS Council, and the legislature should view this as a high priority

Research is a major challenge for New Jersey EMS, perhaps even more than other EMS systems. There are legal and regulatory restrictions on EMS research that make prospective, controlled studies nearly impossible. One EMS Medical Director identified an example of these frustrations. To perform a retrospective research study, approval is required from three institutional review boards: the EMS project hospital board, NJOEMS, and the New Jersey Department of Health. Prospective research is nearly impossible as a representative of the Attorney General's office has ruled that under the current laws, informed consent in prehospital care is impossible.

[33] Ryan, J. (2006). Personal Communications.

Recommendation 2: The NJOEMS should become a clearinghouse for EMS Research. They should work in conjunction with state medical schools emergency medicine residency programs and EMS management educational programs to facilitate prehospital research.

Recommendation 3: The NJOEMS and the MICU Advisory Committee should work with the NJ Attorney General's office to make legal and administrative changes that will facilitate EMS research.

Legislation and Regulation – This component produced some of the liveliest discussions of the focus groups. While passions ran high, there was a great deal of consensus. Twenty-two specific ideas were identified by the groups. The top five ideas included:

1. ***Require local government to provide EMS*** – This topic appears in multiple components and is one of the most seriously discussed by the focus groups. Local municipalities have no legal obligation to provide EMS as they do law enforcement and fire suppression. While it would be a political disaster for a municipality to totally ignore its moral obligation to provide EMS, not having a legal obligation invites benign neglect. Until the need to act becomes a duty to act, the subject becomes a lower priority. Fortunately, there are several possible alternatives to providing EMS including, career municipal (fire, police, or separate service), volunteer first aid squads, commercial services, hospital-based, or a combination of choices.

Recommendation 4: Legislation should be passed that requires local municipalities to provide EMS (or cause to be provided). This obligation should be similar to the obligation to provide law enforcement and fire services.

2. ***Pass enabling legislation*** – That allows the executive branch more discretion to administer and oversee the EMS system.
3. ***Level playing field with one standard*** – EMS services should have one standard regardless of whether they are volunteer, career municipal, hospital-based, or commercial.
4. ***Take medical protocols out of regulations*** – Protocols should be in a separate document produced by NOEMS. They should be taken out of current regulations.
5. ***All EMS providers should be regulated*** – All providers, regardless of operating platform, should be regulated by OEMS. This topic was agreed upon by all groups except for the NJSFAC. They continue to oppose any regulation that involves crew-size minimums or response times. They do believe that the non-affiliated squads should have a choice of being regulated or members of the NJSFAC.

Recommendation 5: All EMS provider agencies should be licensed by NJOEMS.

All of these topics will be discussed in the Legislation and Regulation chapter of this report. Regardless of specific issues, each focus group believed that the current legislation and regulation of EMS are outdated.

Recommendation 6: There should be a comprehensive overhaul of the current state EMS legislation and regulations.

System Finance – This has been identified as one of the weakest components of the New Jersey EMS system. The focus groups identified 25 ideas concerning system financing. The top 6 include:

1. ***Identify dedicated sources of funding*** – It is difficult to determine additional sources that do not already exist. Reimbursement of services is covered by government or insurance funds with the major issue being adequate reimbursement. For other services, different sources may include soliciting benefactors from the business community and the public. This is likely more successful for local volunteer services.
2. ***Enable all to use volunteer training fund*** – This is a logical idea that will be further addressed in the legislative and regulation section.
3. ***Increase funding for ground EMS (reduce competition)*** – This idea involves the increase in reimbursement from federal Medicare and Medicaid programs. As stated earlier, the GAO recently identified that relying on Medicare reimbursement may lead to a loss of between 6 – 17 percent. While this may lead to changes, it is unrealistic to believe that this will be significant.
4. ***Economies of scale for EMS*** – Part of system finance is assuring the public that the system is working smarter instead of working harder. Economies of scale include determining just how many units are needed and what organizational models are used. In New Jersey, there are 507 volunteer first aid squads, many covering limited areas in small towns. Many of the squads appear to provide excellent service, while others are struggling to stay in service or stay completely volunteer squads.

By 1979, the NJSFAC realized that the number of volunteers was beginning to fall. In 1984, volunteers answered almost 90 percent of the BLS calls for the state. By 2004, that number was down to 60 percent.[34] In 2004, the percentage of ALS patients transported by licensed

[34] Aberger, J. 75 Years of Volunteer EMS: A History of the New Jersey State First Aid Council. *The Gold Cross Magazine*, p. 21.

agencies surpassed the percentage transported by volunteer squads (48 percent v. 42 percent).[35] Exact numbers of BLS responses are unavailable as reporting is not mandatory for volunteer BLS agencies.

The above information is a financial concern in that there are steps that can be taken to increase the economies of scale for volunteer EMS. The NJSFAC and unaffiliated squads must take steps to encourage mergers in communities where there are several small squads within a small geographical area. Benefits to consolidation would include fewer buildings to maintain, a consolidated administrative oversight board, need for less vehicles, and volunteer companies being able to guarantee a specific level of service.

While consolidation would yield benefits, it will be difficult. Communities and volunteer providers are very proud of their first aid squads. Each squad has an identity that members fear will be lost. Also, some communities have multiple squads because larger squads may have broken up due to personality conflicts. Regardless, survival of the volunteer squad program will likely depend on the ability for communities and volunteer personnel to realize what is necessary for survival.

Recommendation 7: The OEMS and NJSFAC should work to devise a plan that will encourage consolidation of squads in areas where geographic, human resources, or economies of scale issues make consolidation logical. There should be financial incentives to the NJSFAC and local squads for agreeing to consolidation.

5. ***Funding based on readiness*** – Most fire and police agencies are funded based on readiness and the potential for need. In contrast, EMS is restricted to funding based on service provided (and transportation). Local EMS services should negotiate a reasonable compensation structure for readiness. This may help offset non-reimbursed services or under-compensation by Medicare and Medicaid.

6. ***State reimbursement for non-reimbursed services*** – Some of the focus groups suggested that the state attempt to cover non-reimbursed services. This will be difficult, but does lead to another possibility. A mechanism should be determined to collect unclaimed funds to offset MICU, government or commercial services. This is discussed in more detail below.

General System Finance Issues – There are several system finance issues that need to be addressed. Some of these will require organizational cooperation, trust, and collaboration to

[35] NJOEMS. *New Jersey Mobile Intensive Care Program, Call Volume 1984-2000*, p. 5.

find success. Continued organizational territorialism and posturing will prevent these solutions from reaching fruition.

1. New Jersey should perform an organized analysis for determining the cost of running the state EMS system. This analysis should be based on an EMS Cost Framework that identifies the appropriate system components.[36] This study would be appropriate for larger local systems or for agencies considering increased involvement in EMS.
2. At this time, New Jersey MICU programs have to enter agreements with transport agencies in order to collect for "chase-car" services. This results in spending time negotiating many agreements that does not guarantee collection of fees. This is where innovative actions could mitigate several problems.

NJOEMS should investigate whether the 21 counties in New Jersey could become the Medicare license holders, thereby allowing payment of Medicare dollars to the county. The county would then reimburse the MICU units and licensed BLS squad at an agreed upon rate. The reimbursement would be pre-negotiated and be based on the reasonable and customary reimbursement minus an administrative fee. Fees for services provided by volunteer squads that do not wish to charge, would be placed in a county fund that could be used to offset un-reimbursed services.

3. Another financial issue involves the need to fund the state EMS system. System changes will require a reinforced state EMS office. The air medical section of this report will explain the details of this section. Three dollars of each vehicle registration is earmarked for the NJSP Helicopter program. Cost shifting could allow more money to be collected from user sources and 50 percent of the funding could be redirected to fund the EMS system. There are approximately 2.5 million vehicles registered in New Jersey.[37] This should result in a $7.5 million collection for the NJSP aviation program. A redirection of funds would result in an additional $3.75 million to administer the NJOEMS program.

Recommendation 8: Enact the suggestions listed in sections A, B, and C concerning system fiscal assessment. This includes using the county governments as a conduit for EMS service fee collection and disbursement and redirecting 50 percent of the funds from the automobile registration program from the NJSP air medical program to NJOEMS.

[36] Lerner, E. B., Nichol, G., Spaite, D. W., Garrison, H. G., & Maio, R. F. (2007). A Comprehensive Framework for Determining the Cost of an Emergency Medical Services System. *Annals of Emergency Medicine, 49*(3), 304-313.
[37] Lerner, E. B., Nichol, G., Spaite, D. W., Garrison, H. G., & Maio, R. F. (2007). A Comprehensive Framework for Determining the Cost of an Emergency Medical Services System. *Annals of Emergency Medicine, 49*(3), 304-313.

Recommendation 9: NJOEMS should begin a dialogue with CMS to facilitate the changes to the Medicare collection process. Organizations including the NJSFAC, NJMTA, and similar groups should assist with the process. NJOEMS and several organizations have previously approached this, but the approach should change. Instead of applying for exceptions or protesting, focus should be centered on working within the system.

Human Resources – This component evoked some of the most passionate discussions of the focus groups. There were 22 major ideas identified by the focus groups with the top 5 being:

1. ***Access to pensions/career ladder*** – Many EMS providers including most MICU paramedics do not have a guaranteed pension fund similar to other public safety and government employees. As the first generation of New Jersey paramedics reaches retirement age, many are unable to retire. During the focus groups, the facilitator asked if anyone could name five paramedics who retired after completing years of service with a full pension. No one was able to complete this task.
2. ***Pay and benefit parity with police and fire*** – Traditionally, EMS providers do not receive salary or benefits equivalent to other public safety counterparts. On average, fire-based EMS providers earn 33 percent more than their commercial/hospital-based counterparts. Fire and police providers also have better vacation, sick leave, investment, and injury protection benefits.
3. ***Recruitment and retention initiatives*** – NJOEMS should lead an extensive recruiting and retention targeted at increasing both EMS career and volunteer ranks. This includes beginning the recruitment process in middle and high schools. There must also be a realization that social and economic issues are changing the landscape of volunteer EMS. Increased training requirements, legal issues, infectious and contagious disease exposure, greater expectations, more families relying on two-earner incomes, and population shifts may permanently change what can be expected from the volunteer EMS system.
4. ***Establish a paramedic training fund*** – This can be accomplished by allowing the paramedics to start a training fund or benefit from the existing EMT training fund.
5. ***Performance-based licensing*** – Paramedics should be licensed to practice their skills in any appropriate medical environment.

These human resources topics will be covered further in the Workforce chapter.

Medical Direction – The focus groups discussed 15 ideas in regards to medical direction. The top five included:

1. ***Standards for medical direction/medical command*** – Legislation and regulation should be expanded to solidify the standards for EMS medical direction. It is no longer acceptable for any interested physician to be an "in name only" medical director. Those wishing to provide EMS medical direction should have special training and mentoring before they are allowed to practice as a primary medical director. Training programs include portions of formal emergency medicine residencies, EMS post-residency fellowships, and EMS medical direction programs held by ACEP, ACOEP, AAEM, and NAEMSP.

Recommendation 10: Upgrade the qualifications for EMS Medical Directors, including the requirement for documented training and EMS experience.

2. ***Appoint a state EMS Medical Director*** – It would be of great benefit for New Jersey to hire a full-time EMS Medical Director who would oversee all EMS clinical issues including clinical practice and medical direction. Most states have a medical director serving in either a full-time, part-time, or volunteer capacity. For New Jersey, a dedicated, full-time physician would be the most beneficial. Based on population density, upcoming changes to the EMS system, and the variety of service models, full-time direction is needed. This position is supported by the American College of Emergency Physicians, the National Association of EMS Physicians, and the National Association of State EMS Directors (Officials).[38]

   There are several cautions that should be observed:

   - This must be a full-time, dedicated position, not a consultant or an on-paper position.
   - The incumbent should be a physician (MD or DO) licensed to practice medicine in New Jersey, be board-certified in emergency medicine by ABMS or AAEM, and have documented EMS experience.
   - The incumbent must complete the NAEMSP National EMS Medical Directors Course and Practicum (or equivalent).
   - The compensation package offered must be competitive with other emergency medicine positions of that status.

[38] NAEMSP. (2005). Role of the State EMS Medical Director. *Prehospital Emergency Care*, 9, 338.

Recommendation 11: New Jersey should hire a paid, full-time state EMS medical director.

3. ***Active medical direction at all levels –*** ALS-level medical direction is very active in New Jersey. BLS medical direction is almost non-existent. Licensed agencies are required to have a medical director, but this is often on paper. Requirements for BLS medical direction do not have to be as stringent as for ALS medical directors. It is desirable for all EMS medical directors to have extensive emergency medicine and EMS training and experience. This is wishful thinking and the system should be cautious in dismissing other specialties from offering their time and experience as a BLS medical director. The addition of a state EMS Medical Director will assist in identifying and overseeing physicians wishing to participate in EMS medical direction.

Recommendation 12: There should be EMS medical direction at all levels of care. Qualifications for ALS and BLS medical direction should be established by NJOEMS and oversight provided by a state EMS medical director.

4. ***Protocol-driven care with online direction being an exception only*** – EMS medical directors should strive for a system where most care should be provided based on standing-orders. Online direction should be reserved for exception-only and not required for confirmation of obvious treatment regimens.

5. ***Regional EMS medical direction*** – If NJOEMS decides to adopt a regional EMS approach, each region should have a medical director who serves as an assistant to the state EMS medical director. This will allow oversight of medical direction closer to the provider organization.

Recommendation 13: If NJOEMS adopts a regional EMS model, a regional medical director should be appointed for each region.

Educational Systems – The New Jersey EMS system has a dedicated cadre of ALS and BLS instructors. These educators provide quality instruction to the ALS and BLS providers in New Jersey. EMS education was a lively topic at the focus group meetings with 35 different ideas identified and discussed. The six top ideas identified were:

1. ***Expand use of training fund*** – Most participants favored opening up use of the training fund to all EMS providers. This should be without regard to career/volunteer status or provider level.

2. ***National credentialing model*** – NJOEMS should adopt the national credentialing model espoused by the NHTSA EMS Scope of Practice. This includes the four identified credentialing levels:

a) ***Training*** – The completion of a prescribed education and training program that meets or exceeds the DOT curriculum.

b) ***Certification*** – An independent agency, after cognitive and psychomotor testing, determines that a candidate has met the minimum requirements for the provider level sought after.

c) ***Licensing*** – The recognition by NJOEMS that the provider may provide EMS skills within the state.

d) ***Privileges*** – The ability to provide EMS care for an employer or organization. Usually granted by a medical director or administrative authority.

The focus groups also supported the use of the National Standard Curriculums for New Jersey's EMS provider levels.

The main controversy with this model is the term licensing. The National Registry of EMTs has published a legal opinion that identifies the differences between certification and licensing.[39] Some healthcare providers fear that if EMS providers are "licensed," they would be allowed to independently practice. There is no evidence to indicate that this is true.

Recommendation 14: NJOEMS should adopt the National EMS Scope of Practice Model and create legislation to reflect this change.

3. ***Alternate educational delivery*** – The ability to deliver EMS education in different venues may encourage people to seek EMS as a career or avocation. Online and web-based didactic training programs offer outreach to a large section of the community. NJOEMS has recently approved pilot programs for online paramedic didactic education and is hoping to expand this process.

4. ***County/Regional training facility*** – The group supported the development of more regional-/county-based EMS training facilities, especially for BLS education.

5. ***Adjust continuing education per evidence based results*** – Continuing education requirements should be based on what skills are actually used in the field.

6. ***Remove barriers to becoming an EMT Instructor*** – There appears to be a lack of opportunity for EMS personnel to become certified EMT-Instructors. This may include lack of access to specific phases of the EMT-Instructor methodology and skills development programs.

[39] Brown, Jr., W. E.. (2007). The Difference Between Certification and Licensure: What Every EMT Should Know. *The Registry*, Spring, 2007, 1-2.

It was difficult to determine the accuracy of this statement, but the need for more EMT instructors will likely be a reality. If the state supports the recommendation for a minimum of two EMTs on each ambulance, then additional training programs may be necessary, requiring additional EMT instructors. NJOEMS believes that the current infrastructure will be able to handle the additional burden.

Recommendation 15: NJOEMS should attempt to formally determine how many additional EMT classes and EMT Instructors will be needed to reach this goal.

Another educational issue is the oversight and quality of EMT Continuing Education. All continuing education programs must be approved by NJOEMS in order for students to receive credit and for institutions to receive training fund money. While this process should provide quality management, state officials are bogged down with paperwork instead of being able to monitor and observe continuing education programs. There is also concern that state training fund reimbursement opportunities have created an "industry" that has allowed for reimbursement to supersede quality. For example, there were claims by several focus groups that some programs may offer little more than *pencil whipping* or *just show up* instead of pertinent educational programs with performance requirements. We were not presented with specific evidence, but anecdotal information appeared reliable enough to give this issue some credence. If NJOEMS chooses to adopt a regional plan, efforts can be targeted toward increased quality management of continuing education.

Recommendation 16: If a regional plan is adopted, move oversight of continuing education to the regional level. Also consider adopting policies that allow regional/county academies the authority to approve continuing education, with the NJOEMS providing quality management.

Public Education – As a component of health promotion is used to advise the public of EMS system capabilities, how to activate, and proper use. The focus groups discussed 19 ideas with the top five being:

1. ***State public relations PR plan*** – This item was clearly the top priority for the focus groups as local agencies look for guidance and support in this effort. The challenge of time also plays into this as when human and fiscal resources are challenged, public education tends to suffer. The NJOEMS presently provides public education programs based on financial and human resource availability. Several programs under the EMS-C grants have provided the public with insight into New Jersey EMS.

Recommendation 17: The NJOEMS should create a state EMS public relations plan.

2. ***Identify financial resources*** – Many EMS programs provide public education programs provided that financial means are available. Often, a steady flow of money

is not available for public education. The most prudent action may be for local EMS providers to encourage private benefactors to target donations to EMS public education.

3. ***Educate EMS providers about Public Education*** – This includes educating the street provider and encouraging those who cannot provide patient care to get involved with public education. With proper oversight, community volunteers who do not pursue medical licensure can be trained to assist with this task.

4. ***Identify and use existing programs*** –There are several programs that already exist that are available for no cost. Programs such as "Make the Right Call" are available online and can be adapted for local organizations.

5. ***EMS in school curriculums*** – Providing EMS education within the school system is an excellent way to introduce EMS to children. There are countless instances of young children activating 911, providing first aid and using an automatic external defibrillator (AED). While the subject is critical, fitting it into an already challenging school curriculum must be considered. It is reasonable to recommend that all school children should have a basic background in what EMS is, how to activate the EMS system and training in one-rescuer CPR and using a commercial AED.

Prevention – Prevention of illness and injury is a fertile area for EMS systems that is often overlooked. As with public education, human resources and budget cuts also affects prevention services. The focus groups discussed 27 ideas with the following being the top 5 priorities:

1. ***State funding for prevention programs*** – It is easy to ask the state to fund every EMS activity without considering other priorities. State funding must be complemented with support from local agencies. ALS project hospitals could be of great assistance in this and other prevention matters.

2. ***EMS Prevention as a state initiative*** – The focus groups felt that the state should make EMS prevention a state priority both for public and provider prevention.

3. ***Data collection dealing with prevention*** – Like medical interventions, prevention activities should be evaluated for appropriateness and effectiveness. EMS has accumulated little evidence to determine if our prevention initiatives are the correct ones and if they are accomplishing what they have intended.

4. ***State pilot of prevention programs*** – The NJOEMS should select prevention programs to pilot throughout the state. They should involve both public and provider prevention activities.

5. ***OEMS as a clearinghouse for prevention activities*** – There are likely many prevention programs already available that if accessible, could benefit all EMS organizations. This could save time and focus on the delivery of programs. The NJOEMS can find and offer the best of these programs throughout the state.

Public Access – The focus groups looked at public access beyond 911, taking a more in-depth approach. Expanding the traditional role of 911 is in accord with the NHTSA EMS Agenda for the Future. It includes the ability to assure 911 access in the face of new technologies and when challenged to provide access to those few areas that cannot afford the service.[40]

The focus groups discussed 30 ideas and identified the top five as:

1. ***Primary access points and dispatch regionalization*** – Most focus group participants endorsed a bill passed by the legislature that calls for the consolidation of primary access points to 21 countywide centers. This has occurred in nine of the southern New Jersey counties and has met with success.[41] Many focus groups felt that this must now extend to countywide primary dispatch points (PDSPs). While the primary access point consolidation is a good first step, it does not eliminate one or more transfers from the primary access point to the actual agency that dispatches the call. This is especially true where the primary access points are police agencies and multiple transfers are required until the caller is connected to an emergency medical dispatcher.

Recommendation 18: Aggressively move toward compliance with the consolidated countywide 911 centers. This includes the consolidation of both primary access point and primary dispatch point agencies.

2. ***Enforce Emergency Medical Dispatch (EMD) compliance*** – Dispatch centers that dispatch EMS calls are required to be staffed by emergency medical dispatchers. These dispatchers must have completed a New Jersey approved EMD program or one of the nationally recognized EMD programs, depending on which program is used.

[40] NHTSA. (1996). *EMS Agenda for the Future*. p. 41.
[41] Heldrich Center for Workforce Development (2006). New *Jersey 9-1-1 Consolidation Study: Saving Lives, Increasing Value: Opportunities and Strategies for Consolidating New Jersey's 9-1-1 Emergency Services*. New Brunswick, NJ: Rutgers University.

There are no known validation studies of their Emergency Medical Dispatch program. Maintaining and validating a hybrid program is not efficient. Although switching to a nationally recognized program will take time and will require an initial investment, it is likely a prudent step to take.

Recommendation 19: New Jersey should require emergency medical dispatch programs to adopt one of the nationally recognized Emergency Medical Dispatch programs within five years.

3. ***Develop standard response times (out the door) for ALS/BLS*** – Most of the focus groups felt strongly that there should be response time standards for ALS and BLS units. Response times standards are the responsibility of each licensed or volunteer unit, subject only to local standards. There are some squads that are allowed up to 20 minutes to begin responding to an emergency call.

The NJSFAC is adamantly against state regulation of EMS response times. These time tend to be arbitrary and interval measurement is not exact. They also claim that arbitrary minimum response times will adversely impact the ability for volunteers to continue service. In contrast, the NJ Medical Transportation Association (NJMTA) believes that where there are instances that commercial units are available, they at a minimum, should be called upon to provide back-up services. It is negligent to do anything else.

Recommendation 20: The NJOEMS in conjunction with the NJ EMS Council should determine response time standards for EMS that apply to all agencies. To facilitate this, dispatch centers should be required to collect and report EMS response time intervals. Consider using the NAEMSP position statement concerning the establishment of EMS response time goals.[42]

4. ***Fund Phase 2 and other current technical programs*** – Based on the New Jersey 911 Consolidation Study, a multi-phased plan was written by the New Jersey Office of Communications Technology. The first phase has been completed. The focus groups suggested that Phase 2 technology procurements proceed.

5. ***All EMS units should be equipped with Automatic Vehicle Locators (AVL)*** – This technology will be useful in locating EMS units and determining the closest appropriate unit to dispatch to an emergency. It will also provide an extra safety measure for EMS units. This is an expensive technology and may take some time to implement. Priority for funding should be considered for units in counties that have fully consolidated their 911 and dispatch centers.

[42] Bailey, E.D. and Sweeney, T. (2003). NAEMSP Position Paper: Considerations In Establishing Emergency Medical Services Response Time Goals. *Prehospital Emergency Care, 7*(3), 397-399.

Communications Systems – In New Jersey, this component is a continuation of public access as the ideas and recommendations are closely related. The focus groups discussed 28 different ideas and selected the following top five as their top priority:

1. ***Encourage regional primary access points/PSDP*** – This recommendation is similar to the recommendation in Public Access. This is also in-line with the recommendations provided in the New Jersey 911 study.[43]
2. ***Financial support for regionalization of dispatch*** – This is also consistent with the above. In order to hasten the regionalization process, any financial support must be restricted to those organizations that actively support the 911 regionalization process.
3. ***Establish regional radio channels*** – This was suggested to avoid overuse of existing frequencies. It will depend on the support for a regionalized communications system.
4. ***Dispatch closest appropriate unit to emergencies*** – There must be an acceptance of more automatic and mutual aid in order to guarantee the citizens the best level of care. The addition of AVL will assist in identifying the closest appropriate unit and allow greater scientific accuracy for emergency dispatch.

Recommendation 21: Within five years, all EMS response units should be equipped with AVL.

5. ***Mandate the use of one a medical priority dispatch program*** – Any dispatch center that dispatches EMS calls should be using one of the standardized medical priority dispatch protocols. It will be more efficient to move away from the hybrid program used in New Jersey, to one of the validated protocols. As recommended above, this will likely take up to five years.

Another consideration is what type of certification/license the EMD is required to have. As EMD is considered an EMS program, it should be overseen like other EMS certifications/licenses. Therefore, providers must be held to standards similar to other EMS providers, each system should have a medical director and quality management should be similar to field care.

Recommendation 22: Transfer responsibility and oversight of EMD licensure/certification to NJOEMS. EMD should be codified as a license/certification similar to EMT-B.

[43] *Helddrich Work Center. (2006).*

The proper use of medical priority dispatch is essential to the proper use of resources and weight of response. The limited data available indicates that a large number of ALS dispatches result in cancellations by BLS units. Of 400,442 dispatches, only 173,535 (43.34 percent) were completed by transport. Excluding a relatively small number of online directed termination of resuscitation cases and DOA's, most of cancellations were due to ALS not being needed.

The reasons for this are likely related to:

- Over-dispatch of ALS secondary to either failure to follow MPD protocols. With little quality management, dispatchers may inflate the dispatch level to provide a margin of safety. While this seems to be logical, operating out of fear instead of following the protocol causes unneeded dispatch, poor economies of scale and compromises safety.
- Dispatching of ALS units as a back-up to extended response times for BLS units. Towns use ALS as first responders just to get someone there.

Of the completed ALS transports, focus groups provided anecdotal information to suspect that BLS providers have become over-dependent on ALS providers. New Jersey's restrictive protocols also limit the times where ALS providers can assess the patient and allow for BLS transport.

Recommendation 23: Increase emphasis on the quality management aspects of MPD. Consolidated PSDP centers should make this recommendation easier to implement.

Clinical Care – The success of any EMS system should be primarily based on how well it cares for its patients. Unfortunately, this is not always true. Other legal, financial, technical and human resource issues often confound what should be self-evident. New Jersey's EMS providers have shown a great affinity to good patient care and developing EMS on continuing their success. The focus groups identified 36 ideas with the top five being:

1. ***Annual review of the scope of practice*** – New Jersey EMS providers are concerned that the EMS scope of practice quickly becomes outdated. The legislative and regulatory restrictions have lead to a system-wide malaise that appears to *sap the strength* out of those trying to be progressive. Once legislative and regulatory changes are achieved, the EMS MAC will be able to review the ALS and BLS Scope of Practice, and change it as appropriate.
2. ***Two EMT-B minimum on ambulances*** – As stated in other components, most focus groups enthusiastically support this as an essential component of the EMS system. In contrast, the NJSFAC leadership emphatically rejects this standard as arbitrary.

Unfortunately, the lack of data from EMS patient care reports has kept us from determining what percentage of time that the volunteer BLS units already respond with two EMT-Bs. Those agencies who keep this data would not share it with the study team. If the percentage is low, then the issue may not be great. If the percentage is still high, then time and commitment of resources would increase.

The Emergency Medical Technician and its offshoots, EMT, EMT-A, EMT-B, etc. have been part of EMS for 40 years. There is no plausible reason for states or local agencies to continue as hold-outs or cling to an outdated training and certification level. It is time for New Jersey to close the curtain on the past and recognize that EMT-B is now the standard of care for BLS. Others may assist as drivers or in some cases, care assistants, but these personnel can no longer be charged with primary patient care responsibilities.

Recommendation 24: All BLS ambulances, regardless of delivery platform, must be staffed with at least two NJ certified/licensed EMT-Bs. First responder or other certification programs should not take the place of a state approved EMT-B program.

3. ***ALS staffing levels should be determined by regional authorities*** – The New Jersey EMS system may need to adjust the minimum ALS crew level to one ALS provider. ALS programs are encouraged to set minimum standards based on program needs and the medical director's decision.

4. ***Evidence-based protocols*** – EMS care should be based on medical evidence that is gained through rigorous scientific research. Protocols, procedures and technologies should be added or deleted based on its medical appropriateness. Priority should be given to what interventions do the most good for the greatest number, in the safest manner and most economical manner.

One example is the use of rescue airways, such as Laryngeal Mask Airways, dual lumen airways or similar devices by EMT-Bs. In New Jersey, where ALS is usually available, the need for BLS providers to place these airways is questionable. EMS systems must consider the amount of training required, skill use, efficacy, cost and medical direction. Do the advantages outweigh the dangers? Will this skill do the most good for the most number?

In contrast, the ability for EMT-Bs to administer nebulized beta-agonist agents will positively affect many patients with restrictive airway disease, be cost effective, require less training, and have a low potential for harming a patient. This type of intervention may also allow New Jersey to consider allowing paramedics to assess patients and turning stable patients over to EMT-Bs. While rescue airways may be an appropriate EMT-B skill, is it a priority considering the limited resources that exist?

Recommendation 25: Add the administration of oxygen-nebulized or metered-dose inhaled beta agonist agents to the EMT-B scope of practice.

5. ***Expand the scope of practice/service for EMT-Bs*** – As recommended in the first component, EMT-Bs are trained to perform many basic skills that would be of benefit in other healthcare situations. This will be explained further in the chapter on workforce issues.

Information Systems – Regardless of what component that the focus groups discussed, one could hear a theme of *all New Jersey EMS system roads lead back to information systems*. Much of our ability to assess the New Jersey EMS system was the lack of data. This included response intervals, staffing, patient care, or any measurable item. This frustration was also felt by many of the focus groups.

The focus groups discussed 17 ideas and chose the following five items as top priorities.

1. ***Statewide EMS database*** – Each focus group agreed that a statewide database should exist. There was less agreement as to whether this should be aggregate data or each patient contact. The NJSFAC has developed a database and collects aggregate data from squads who wish to voluntarily participate. It is estimated that 25 percent of squads participate.

2. ***Statewide Patient Care Report (PCR)*** – There is no uniform statewide patient care report. All ALS units and licensed BLS agencies are required to complete a patient care report and forward aggregate data to the NJOEMS. Several ALS and licensed programs are testing a computerized PCR known as EMSCharts. The NJOEMS is currently analyzing the use and efficacy of this report. Some NJSFAC squads are also piloting a computerized charting system.

3. ***Funding for technology*** – New Jersey EMS needs to commit to technology regarding information management. Until a complete, accurate and reliable statewide EMS information system is implemented, we will never know the true state of EMS in New Jersey.

4. ***Require PCR for all patient encounters*** – One of the shocking revelations about the EMS system is that a PCR is not required for each patient care encounter. EMS is the practice of medicine outside the hospital setting. No other practice of medicine occurs where patient care reports are not completed. In most EMS systems, patient care reports become part of the patient's medical record.

5. ***Web-based communications system for access by all*** – Two-way information systems should be accessible by all. Some information will be restricted due to legal issues.

Based on the above information and our investigation, TriData offers the following recommendations involving the NJEMS information system.

Recommendation 26: NJOEMS should create a statewide EMS database using the NEMSIS minimum data set.

Recommendation 27: NJOEMS should create a statewide PCR that can be used by all ALS and BLS units. Use of this report should be required for all EMS units. Reporting of aggregate data should not be accepted as a substitute for the statewide PCR.

Recommendation 28: All EMS patient care encounters must be documented on an official patient care report. A copy of all patient care reports must be left at the receiving hospital. Emergency departments must place a copy of the PCR or download the PCR data into the patient's chart. Under no circumstances should EMS PCRs be discarded.

Recommendation 29: EMS services must adopt an approved statewide PCR to receive any state funding.

Recommendation 30: Primary access points and primary dispatch points centers must employ appropriate hardware and software necessary to provide accurate data and populate data fields on the PCR.

These recommendations are some of the strongest that we make. Until the EMS information system becomes accurate and usable, New Jersey will be unable to provide effective oversight of its EMS system.

Evaluation – Knowing the strengths and weaknesses of the EMS system is a key to a successful future. The focus groups identified 21 ideas choosing the following six as the top priorities:

1. ***Internal QI process*** – The NJOEMS should begin a formal internal QI process.
2. ***Timeline for evaluation*** – There should be specific timelines set for EMS system evaluation. There can be different levels of evaluation with different timelines (i.e. certain items evaluated annually, others triennially and a comprehensive evaluation every five years).
3. ***Publish evaluation results and recommendations to the EMS community*** – This information should be published through the NJ EMS Council.
4. ***Independent evaluation of OEMS*** – A comprehensive evaluation of NJOEMS should be performed by an outside organization every five years.

5. ***Benchmarking*** – Benchmarks and best practices should be developed. The NJOEMS should provide instruction to local EMS systems on how to use these measurements for system improvement.
6. ***Standards should be developed to address shortcomings*** – There should be a standard method for the NJOEMS to address shortcomings identified by the evaluation process.

The proceeding information was gained from EMS providers across the state who unselfishly gave their time to make this evaluation possible. Appendix C contains a list of focus group ideas by each component. Appendix D contains an acknowledgement of each focus group participant.

IV. RECOMMENDATIONS FOR CHANGING EMS LEGISLATION AND REGULATION

TriData was asked to review the current legislation and provide recommendations for change. We address these issues from a legislative and regulatory approach. Besides reviewing the current information additional legislation is recommended.

Legislation – Chapter 2K: Emergency Medical Services

As stated in Chapter IV, Focus Group Assessment, New Jersey needs to enact comprehensive legislation that overhauls the entire EMS system. This legislation should be *enabling*, focusing on providing a landscape for the provision of quality EMS. The current legislation emphasizes restrictions and political placation over a systems approach for good EMS care.

26:2K-7. Definitions

eliminate the word "telemetered."

change "Mobile intensive care paramedic" to "paramedic." This conforms to the National Scope of Practice.[44]

k. Add the term "licensure." Refers to a paramedic who has completed a paramedic program approved or recognized by the Commissioner of Health, has obtained certification as an EMT-Paramedic by the National Registry of Emergency Medical Technicians, and is recognized by the Commissioner of the New Jersey Department of Health.

26:2K-8. Mobile intensive care paramedic…

Change "certification" to "licensure"

Change the process to reflect the training, certification, and licensure process explained in Chapter 4. For example, those who have completed a paramedic program approved or recognized by the NJDEMS, has obtained certification as an EMT-Paramedic by the National Registry of Emergency Medical Technicians, and has successfully completed a state protocol examination administered by the NJDEMS may apply for licensure as a paramedic.

Upon granting of practice privileges by an ALS program medical director, the ALS program shall notify the NJDEMS of the approval to practice.

[44] NHTSA (2006). The National EMS Scope of Practice Model. p. 21.

26:2K-9. Revocation of licensure or practice privileges

Change to "certification to licensure"

Add – ALS programs will notify the NJDEMS any time that the practice privileges of a paramedic have been revoked. The NJDEMS will notify the licensee, by mail, of the awareness of this action. No further action will be taken unless there is a need to act against the license

26: 2K-10. Performance of advanced life support….

Rewrite this section to read – A licensed paramedic who has current practice privileges may provide advanced life support based on standing orders, protocols, or direct order by an ALS program physician. Direct communications with a physician is only necessary when determined by state protocol or the local ALS program medical director.

26: 2K-11. Performance of advanced life support…….

Delete this section and address in regulations.

26: 2K-12. Authorized programs…..

Change to – Only an ALS program authorized by the commissioner……

Change to – An ALS program authorized…..

Change to – The commissioner…..which an ALS program shall meet …

Change to – The commissioner….if the ALS program…

26: 2K-14. Liability for civil damage

Change to read – No paramedic, ALS program….or licensed ambulance service or rescue squad…

26: 2K-16. State mobile intensive…

The commissioner shall appoint a state EMS medical director with the responsibility for the medical oversight of EMS delivery in New Jersey. The state EMS medical director may, with approval of the Commissioner, appoint up to three regional medical directors with similar authority for specifically defined areas in New Jersey.

The commissioner shall establish and the state EMS medical director will chair a state…

26:2K-18. Duties of paramedics…

Change to read – Licensed paramedics, who have obtained practice privileges, may perform advanced life support skills in any setting authorized by the program medical director.

26:2K-19. Emergency service training program…

Delete

26:2K-20. Duties of health care professionals…

Change to – Licensed or certified physician assistants and registered nurses may be authorized to practice as a license paramedic provided that the incumbent completes the certification, licensing and practice privileges required to obtain paramedic licensure.

26:2K-21 thru 34. EMT Intermediate

Delete all sections and any reference to EMT-Intermediate.

26:2K-36. Emergency medical services helicopter….

Change – There is established…..in the Office of Emergency Medical Services…..

26:2K-36.1. Emergency medical services helicopter……

Replace based on new approaches (see Chapter 7).

26:2K-39 thru 47. Emergency medical technicians – defibrillation

Delete all

26:2K-52. Emergency medical services for children…

Consider – Should this be a gubernatorial level council or a committee of the EMS council. While having a high level council gives the appearance of importance, the state should question whether it is as productive. For example, the gubernatorial appointment process causes delays that leave council seats unfilled for extended time periods.

26:2K-55. Definitions

Delete – "Council"

26:2K-57. Annual reimbursement of private entities……

Change – The commissioner, within the limits of those monies in the fund shall annually reimburse…….to provide training and testing for EMS personnel, who are seeking EMT-B or paramedic licensure/certification or relicensure/recertification…

Change – The priority for reimbursement is initial training for volunteer EMT-B, then career/commercial service EMT-B. The second priority is continuing education for volunteer EMT-B, then career/commercial service EMT-B. The third priority is any paramedic training, initial or continuing education.

Add – The commissioner, thru the NJOEMS will be responsible for determining the implementation of how the prioritization will operate.

26:2K-58. Waiver of training fee….

Delete – "…a volunteer ambulance, first aid or rescue squad by the chief supervising officer of that squad."

Replace with – "a licensed EMS organization by the chief supervising officer of that organization."

26:2K-59. Advisory council for basic…

Delete the entire section. Responsibility for the fund should be delegated to the NJOEMS. See regulations.

26:2K-60. Request for emergency assistance…

Change to include these protections for any municipal, commercial or private agency.

26:2K-61. Enactment of reciprocal……

Change to include these protections for any municipal, commercial or private agency.

Rulemaking Process for Mobile Intensive Care Programs (N.J.A.C. 8:41)

The rulemaking process for MICU's is cumbersome and contrary to good patient care. Changes involve too many bureaucratic procedures that should be reserved for adaptive change and not technical updates.

Recommendation 31: Change EMS legislation and regulations to move operational and technical issues outside of the legislative and regulatory process. Operational and technical issues should be the responsibility of the NJOEMS and the state EMS medical director.

Legislation – Chapter 5F: Highway Safety

This legislation contains important items that are necessary for the oversight of EMS in New Jersey. The lingering question is whether to continue this legislation as is or move it to the 26:2K legislation. Below is a review of the current legislation followed by an overall recommendation.

27:5F-21. Duties of the Governor;…

(4) Change – "Adopt training programs, guidelines and standards of employees or members of organizations providing emergency medical service programs."

27:5F-22. Training programs

Change – "the New Jersey Highway Traffic Safety Program shall include the training program for all basic life support providers that shall comply with…

27:5F-23. Political subdivisions….

Add: c. "Political subdivisions submitting grants for these federal funds must provide or cause to be provided emergency medical services for their subdivision."

27:5F-26. Applications from political subdivisions……

Merge this with 27:5F-23.

27:5F-27. First aid, rescue and ambulance……

This should be changed to read:

"Each volunteer or non-volunteer EMS provider organization shall be licensed by the NJOEMS to provide ambulance transportation. They shall also notify the local jurisdiction having authority of their intent to become licensed. Upon approval of the local jurisdiction, they may file an application with the NJOEMS to seek licensure. Within 90 days of application, NJOEMS will determine whether the organization meets the minimum standards for licensure. Those agencies meeting the prescribed standards will be issued a two year license to operate.

Licensed volunteer or non-volunteer EMS organizations shall agree that all vehicles and equipment meet standards espoused by NJOEMS before they are placed in service. Personnel will be licensed/certified as New Jersey EMT-Bs. Non-EMT-Bs may serve as part of a BLS crew provided that at least two EMT-Bs are staffing the unit.

The licensee or the licensees political subdivision may voluntarily surrender their BLS license to NJOEMS. The NJOEMS may revoke, suspend or place conditions on licensed BLS organizations for violations of legislative or regulatory mandates. Actions against the licensee may be taken as outlined in legislation."

The above suggestions are a possible solution for some legislative needs. It may still not be the most appropriate way to introduce comprehensive EMS legislation. Ultimately, the best solution would be to move all EMS issues out of the Highway Safety Act and move it into the EMS legislation.

Recommendation 32: Move all EMS issues out of the Highway Safety Act and into EMS Legislation. Accept the above suggestions for the new legislation.

Regulation – Chapter 41: Advanced Life Support Services

New Jersey's EMS regulations are lengthy and tend to be technically oriented. The information below reviews EMS regulations and suggests changes.

The review of this regulation is by subchapter. All suggestions are based on the current ALS delivery profile. Changes to the EMS system that may involve regionalization may alter this information.

Subchapter 1. Authority, Scope and Definitions

8:41-1.3 Definitions – Update all definitions to meet standards and guidelines (i.e. AHA CPR Guidelines- meet the 2005 guidelines).

Eliminate – "certification" and update the definition of "license."

8:41-1.4 Waivers – Delete, new regulations will make this term unnecessary.

Subchapter 2. Licensure, Inspections and Audit

No recommendations

Subchapter 3. General, Administrative, Crewmember…

8:41-3.3- Change 7. Assuring that the patient is attended by at least one ALS crew member or that care is transferred to an appropriate level provider.

8:41-3.4 Delete Sections 15 and 16 and Add – any device, equipment or intervention authorized by the ALS program medical director.

8:41-3.5 Add (f)- When authorized by standing order or online medical direction, medications that provide chemical restraint may be administered.

8:41-3.8 Patient care reports-Add- When available, the provider shall complete an electronic patient care report. At the receiving facility, the provider shall upload the PCR to a designated computer or print and provide a paper copy to the receiving facility.

8:41-3.9 Pronouncement of death – (a) 1 delete everything after "a complete external examination." (b) delete

8:41-3.14 Quarterly reports – Add (c)-"When available, providers who electronically transmit copies of their PCRs to NJOEMS will no longer be required to file a quarterly or yearly report."

8:41-3.20 Communications performance standards-(a)3 delete "and electrocardiogram tracings."

8:41-3.21 Communications failure protocols-Delete and move to medical protocols.

8:41-3.22 Biomedical telemetry…eliminate all reference to electronic transmission of ECGs. Add paper copies of 12-lead ECGs will when appropriate be attached to PCRs.

Subchapter 4. Specific Vehicle and…

No Recommendations

Subchapter 5. Research Proposals

8:41-5.1 Research Proposals-change (b) ….”unless first authorized by NJOEMS and the state EMS medical director."

(c) 2 Change – "The principal investigator shall obtain the approval of the NJOEMS IRB. Local medical facilities may require approval of institutional IRBs but are encouraged to accept the NJOEMS IRB as fulfilling these requirements.

(c) 6 Change – "The MICU Advisory Council shall review and recommend action to the state EMS medical director."

(d) Delete all – Principal researcher will use acceptable proposal format.

Subchapter 6. Administration and storage of medications

8:41-6.1 Medications and therapeutic agents- Change as follows:

The New Jersey State EMS Medical Protocols shall contain a list of minimum diagnostics, medications and therapeutic agents to be carried by all ALS units. The program medical director may apply for additions to the minimum diagnostics, medications and therapeutic agents. Requests will be reviewed by the MICU Advisory Council. The MICU Advisory Council shall forward a recommendation to the state EMS medical director. The state EMS medical director will make a final determination on the request.

Change as above

Eliminate all references to specific medications and therapeutics.

Subchapter 7. Standing orders for adult patients

Delete the entire section. Updated information will be contained in the New Jersey State EMS Protocols.

Subchapter 8. Standing orders for pediatric patients

Delete the entire section. Updated information will be contained in the New Jersey State EMS Protocols.

Subchapter 9. Specific Mobile Intensive Care…….

8:41-9.1 Scope and purpose

Change –"These rules shall apply to any agency that ….."

Change-"No agency shall operate….."

8:41-9.2 Certificate of need requirements and…..

thru (d) Delete

The ALS program will enter into agreement with the jurisdiction having authority to provide service.

The ALS program must agree that if local jurisdictions cannot enter into agreements with an ALS program, the NJOEMS may require that ALS program to provide service for that area until an agreement can be reached. In these cases, NJOEMS will guarantee compensation for those services.

8:41-9.4 Medical director

(c) delete

(d) delete

(e) change "medical control" to "medical oversight"

Add – Program medical directors must be approved by the state EMS medical director (or regional medical director).

8:41-9.6 Medical command

thru (m) delete- to be addressed in the New Jersey State EMS Medical Protocols.

8:41-9.7 Medical treatment protocols

Change – All providers will follow the New Jersey State EMS Medical Protocols. Programs will be permitted to apply for additions thru the MICU council and state EMS medical director.

8:41-9.8 Required crewmembers

Change to read –When "in service" each non-transport MICU shall be staffed by at least one paramedic or one registered nurse who meets the requirements set forth at N.J.A.C. 8:41-9.9.

Transport capable units shall be staffed by at least two EMS providers, at a minimum, one paramedic or one registered nurse who meets the requirements set forth at N.J.A.C. 8:41-9.9 and one EMT-B

8:41-9.19 MICU Dispatch

Add (b) 6 – Dispatchers that are certified as New Jersey Emergency Medical Dispatchers.

8:41-9.21 Hours of operations

Add (b) EMS supervisory vehicles may, at the program medical director's discretion, carry ALS equipment and function as an ALS non-transport unit. Programs are not obligated to advise NJOEMS of their daily service status.

8:41-9.22 Temporary utilization of…

Delete- this is a local program issue.

Subchapter 10. Specific Specialty Care……

8:41-10.4 thru 10.6 these should be merged with MICU medical direction regulations.

8.41-10.8 Required crewmembers

Change to read:

At least one approved RN and two basic EMT-Bs or two paramedics or one EMT-B and one paramedic.

If the RN is also an EMT-B or paramedic than only another provider of the appropriate level is required.

The program medical director may approve an STCU unit operate without a nurse when the paramedic's scope of practice covers patient care needs.

Subchapter 11. Specific Air Medical Services Requirements

8:41-11.6 Medical Command

Move to EMS Protocols

8.41-11.17 (a) 1 Dispatch

Consider going to one statewide dispatch center

8.41-11.19 (c) Add

Unauthorized response to an emergency mission will lead to revocation or suspension of the service certification. The first offense will incur a suspension of 90 days, with subsequent offenses making the service subject to revocation.

Subchapter 12. Scope of Practice…

8.41-12.1 (e) 5 Scope of Practice – Delete

8.41-12.2 (b) 6 Scope of practice for the EMT-Basic

Change to meet guidelines of the current DOT EMT-B Curriculum.

8.41-12.2 (b) 15 Add

The administration of sublingual nitroglycerin, epinephrine auto-injector, or nebulized/metered-dose beta agonist inhalers.

8.41-12.2 (b) 16 Add

At the discretion of the local medical director, able to transport patients assessed by ALS but determined not to require additional ALS monitoring or procedures.

8.41-12.3 (e) 10 Delete

8.41-12.3 (i) Add

Violations of legislative mandates, regulations or medical protocols may first be adjudicated and appropriate corrective action taken by the local program. Local programs may request that NJOEMS accept this action in lieu of further action against the licensee. If accepted, the incident will be recorded as a formal written warning as per 8.41-12.3 (c). Nothing in this section will affect the licensee's rights under 8.41-12.4.

8.41-12.3 (j) Add

Nothing in this section will prevent the local medical director from withdrawing practice privileges from a licensee. Upon removal of practice privileges, for any reason, the ALS program will notify the NJOEMS of the action. Notification is not synonymous with NJOEMS action against the license. NJOEMS will take action only if the licensee may be in violation of legislative mandates, regulations or EMS protocols separate actions may be pursued as per these regulations.

8.41-12 Appendices

Any provider who adopts a NJOEMS-approved electronic patient care report, including reporting elements, are not required to submit any reports contained in these appendices.

Additional Legislation, Regulations, or Protocols to be Considered

The following legislation, regulations, or protocols should be considered. Any additions should be based on the goal of quality patient care with a minimum of bureaucratic regulation. Comprehensive EMS Legislation should include each of these items.

Legislation – Legislation to be considered:

- Volunteer BLS services should be licensed similar to other EMS services.
- Identify the position of NJOEMS director as an assistant commissioner.
- Allow the creation of three EMS regions, as part of the NJOEMS. A regional administrator may be appointed for each EMS region who acts with the delegated authority of the assistant commissioner.
- Mandate a countywide PSDP.
- Merge pediatric legislation into the comprehensive legislation package.

Regulations – The following should be added under regulations:

- BLS Units required to be staffed by at least two EMT-Bs.
- Air Medical dispatch updates.
- Consider the advantages of having a formal ALS-RN license.

Executive Orders – Executive orders including reorganization of the NJEMS Council should become part of Comprehensive EMS Legislation.

Protocols – Develop a New Jersey State EMS protocol for EMT-Bs and paramedics. This would be a statewide document that is followed by all programs. Program medical directions would be required to apply to the MAC for additions. The protocols should be streamlined and concentrate on patient care. NJOEMS should avoid the temptation of making this a procedure manual or teaching manual.

This is an appropriate time to create this as a recommendation was to deemphasize online medical direction in favor of standing orders. Online direction should be considered exception only. Although the literature is limited, the trends show that not requiring online medical direction leads to slightly shorter on-scene times and a high-level of agreement between

physician and EMS provider diagnostic agreement.[45] Other studies have revealed minimal error ratios when online direction was deemphasized.[46] Still more evidence questions the value of online medical direction because paramedic adherence is protocol is not dependent on online availability.[47]

In conclusion, online medical direction has its place in EMS. Medical directors and program managers must decide when it should be required. The state protocols should define which situations should require online medical direction and which situations should require hospital notification only (no need for a physician to be online). The requirement to speak with a physician during every ALS intervention is not supported and may take emergency physicians away from other patient care duties.

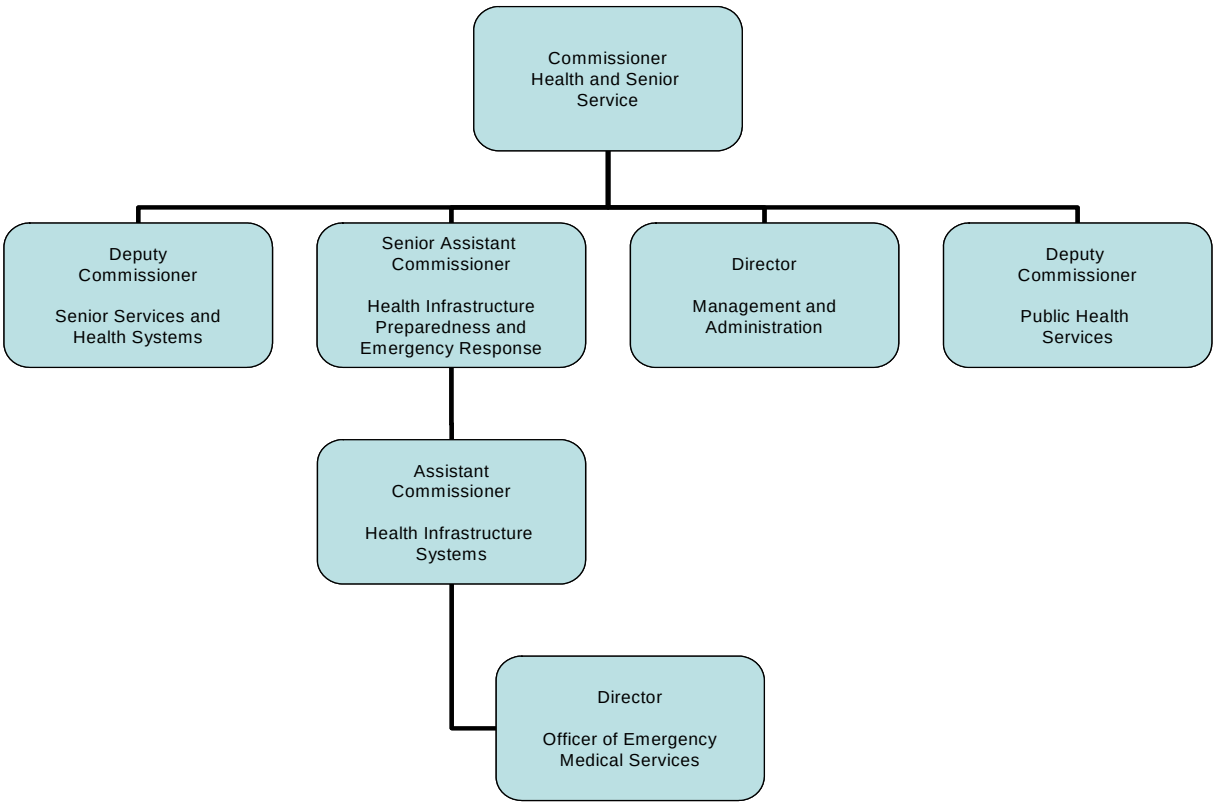
Recommendation 33: The state EMS protocol should state the instances where online physician direction is required. There is no evidence that supports requiring physician contact for every patient encounter. Using nurses or physician assistants for ALS online direction is not recommended.

[45] Rottman, S.J., Schriger, D.L., Charlop, G., Salas, J.H. and Stanford, L. (1997). Online Medical Control Versus Protocol-Based Prehospital Care. *Annals of Emergency Medicine, 30*(1), 62-68.
[46] Eckstein, M. (2000). Implementation of Standing Field Treatment Protocols in an Urban EMS System. *Annals of Emergency Medicine, 19*(4), 280-283.
[47] Klein, K.R., Spillane, L.L., Chiumento, S., and Schneider, S.M. (2002). *Prehospital Emergency Care, 1*, 80-4.

V. THE NEW JERSEY STATE EMS SYSTEM

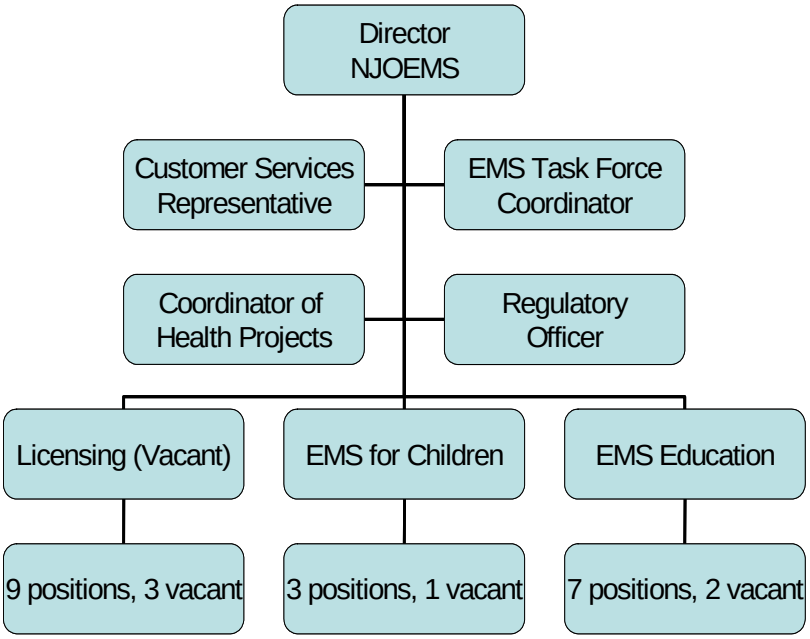
The New Jersey Office of Emergency Medical Services (OEMS) was created in 1970 as part of the Department of Health and Senior Services. Recently, the OEMS was placed in the Division of Health Infrastructure Preparedness and Emergency Response (Figure 20).

Figure 20: New Jersey Department of Health and Senior Services



The NJOEMS is managed by a director who has an authorized staff of 21 personnel but with 10 vacant positions. Several vacancies are in key positions including the chief and assistant chief of EMS Licensing, the assistant chief of EMS education, and several technical and administrative support staff. Current OEMS staffing is shown in Figure 21:

Figure 21: New Jersey Office of EMS (OEMS)



The NJOEMS also provides the primary administrative resources for the New Jersey EMS Council, including: staff support, committee and subcommittee meeting support, office supplies, mailings, and office supplies. OEMS staff often attend committee and subcommittee meetings to provide liaison.

The NJOEMS oversees and directs basic and advanced life support training, testing and certification. This includes overseeing initial and continuing education for over 22,000 EMTs and 1,500 paramedics. Along with provider training programs, OEMS trains and certifies EMT-Instructors and approves all continuing education programs. The OEMS education staff has recently approved an online paramedic training program that will allow paramedic candidates to complete some didactic training online. Plans are in progress to start online education for EMT-B candidates. It is too soon to judge the effectiveness of this program.

The New Jersey EMS Council – is an advisory committee appointed by the Commissioner of Health and Senior Services. The council is comprised of 31 members, including physicians, nurses, career and volunteer EMS providers, administrators and chairpersons of various professional organizations. The Director of OEMS and the OEMS Education Operations serve as members (in ex officio roles).

The council is charged with seven basic responsibilities:

- Making recommendations to the Commissioner of Health and Senior Services concerning EMS.

- Monitor legislative developments (federal and state) concerning EMS.
- Advise the Commissioner on proposed legislation and regulation.
- Review, update and implement components of the Governor's 1988 EMS Final Report.
- Receive reports and recommendations from committees.
- Support EMS educational activities.
- Develop a statewide public information/education program.

The council has eight standing committees but may appoint ad hoc committees as needed. The standing committees include: operations, professional education/certification, legislative, system finance, public education, medical, trauma and pediatrics.[48]

The Mobile Intensive Care Unit Advisory Committee (MICU Advisory Committee) advises the EMS council and the Commissioner on matters involving ALS protocols and procedures. The MICU Advisory Committee reviews all requested ALS changes as a precursor to beginning the regulatory approval process. Committee members include EMS physicians and EMS administrators who are often frustrated that their recommendations must go through an arduous approval process before the Commissioner can officially approve them. In many cases the Commissioner and the MIC agree on issues but are constrained by the bureaucratic process.

Trauma Care – New Jersey is fortunate to have a system of care for trauma care that includes Level I and II trauma centers strategically placed throughout the state. A recent test of the system occurred on April 12, 2007, with the serious injury of Governor Corzine and his driver after a vehicle crash. Rapid EMS response, air medical evacuation to a Level I trauma center and sophisticated trauma care saved the governor and allowed him to return to his duties relatively quickly manner. Governor Corzine's experience was used to champion the renewal of the Federal Trauma Care System Planning Act, signed into law just a few weeks after the incident.[49] To date, however, this act has not been funded.

New Jersey has designated three Level I and seven Level II trauma centers.

Because of the large personnel and facility resources needed for patient care, education and research, most Level I trauma centers in the U.S. are university-affiliated teaching hospitals.

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[48] Jacobs, F.W. (2006). *Reorganization of the New Jersey Emergency Medical Service Council*. Executive Order updated 2006.
[49] The Abaris Group (2007). Evidence in Support of the Trauma Care Systems Planning and Development Act. *The TAG Line. 4*(3) 1-5.

This is the case in New Jersey, where all three Level I trauma centers are hospitals which are affiliated with the University of Medicine and Dentistry of New Jersey. A Level I trauma center is a regional resource facility and has the capability to provide total care for all aspects of trauma, from prevention through rehabilitation.

Level I trauma centers in New Jersey must treat a minimum of 600 patients per year. This is because data show there is a correlation between patient outcome and the number of procedures, which a surgeon performs annually. Adequate experience with life-threatening or urgent cases is necessary for the trauma team to maintain its skills. Cost-effectiveness is also a consideration.

Level II trauma centers are also expected to provide definitive trauma care, regardless of the severity of injury. Level II trauma centers have most of the clinical capabilities of a Level I. Level II trauma centers are required to participate in trauma research conducted by the Level Is and to sponsor public and provider educational programs in cooperation with the Level I centers. Level II trauma centers must treat a minimum of 350 patients per year.

Level I Trauma Centers

- UMDNJ-University Hospital, Newark
- Robert Wood Johnson University Hospital, New Brunswick
- Cooper Hospital/University Medical Center, Camden

Level II Trauma Centers

- Hackensack University Medical Center, Hackensack
- St. Joseph's Hospital and Medical Center, Paterson
- Jersey City Medical Center, Jersey City
- Morristown Memorial Hospital, Morristown
- Capital Health System at Fuld, Trenton
- Jersey Shore Medical Center, Neptune
- AtlantiCare Regional Medical Center, Atlantic City[50]

[50] NJOEMS. (2006). *NJ Trauma Centers*. Available: [Online.]. http://www.state.nj.us/health/ems/trama_centers.shtml.

EMS Task Force – A federal UASI grant allowed NJOEMS to form an EMS Task Force for the purpose of assuring a coordinated response for mass casualty incidents where local resources become overwhelmed. The task force is divided into three major sections, northern, central, and southern New Jersey. Counties are assigned to a task force and agree to follow guidelines similar to mutual aid agreements. Squads and ALS projects that wish to participate must apply to the regional task force for admission. Units must meet minimum requirements and staffing profiles, including a minimum of two EMT-Basics on each BLS unit.

Upon acceptance into the task force, participating units are required to advise what units and types are available. The task force pre-plans for mass casualty incidents and provides assistance upon request. This does not take the place of existing incident command systems or mutual aid agreements.

The NJOEMS provides one, full-time employee as the task force coordinator. Although the regionalization concept is limited to the EMS Task Force, it creates future possibilities for NJEMS.

Proposed Restructuring of the EMS System – New Jersey would greatly benefit from a restructured EMS system. Restructuring should focus on decentralization of the daily management of EMS, favoring adaptive oversight instead of technical duties for state-level officials, assuring that essential positions are filled and allowing for better coordination between state, regional and local agencies. The current structure of the OEMS is insufficient to carry out these responsibilities.

Restructuring of the NJOEMS should meet three basic goals:

- To structure a system that allows for state, regional and local oversight of EMS.
- To create a system where comprehensive EMS legislation can be operationalized.
- To bring the state EMS system closer to provider organizations.

The initial change should be the designation of EMS as a full division of the Department of Health and Senior Services. For the state to pursue the requirement that municipalities consider EMS equal to police and fire, state government must set that same example. The NJOEMS should be renamed the New Jersey Division of EMS (NJDEMS). The NJDEMS should be directed by an Assistant Commissioner.

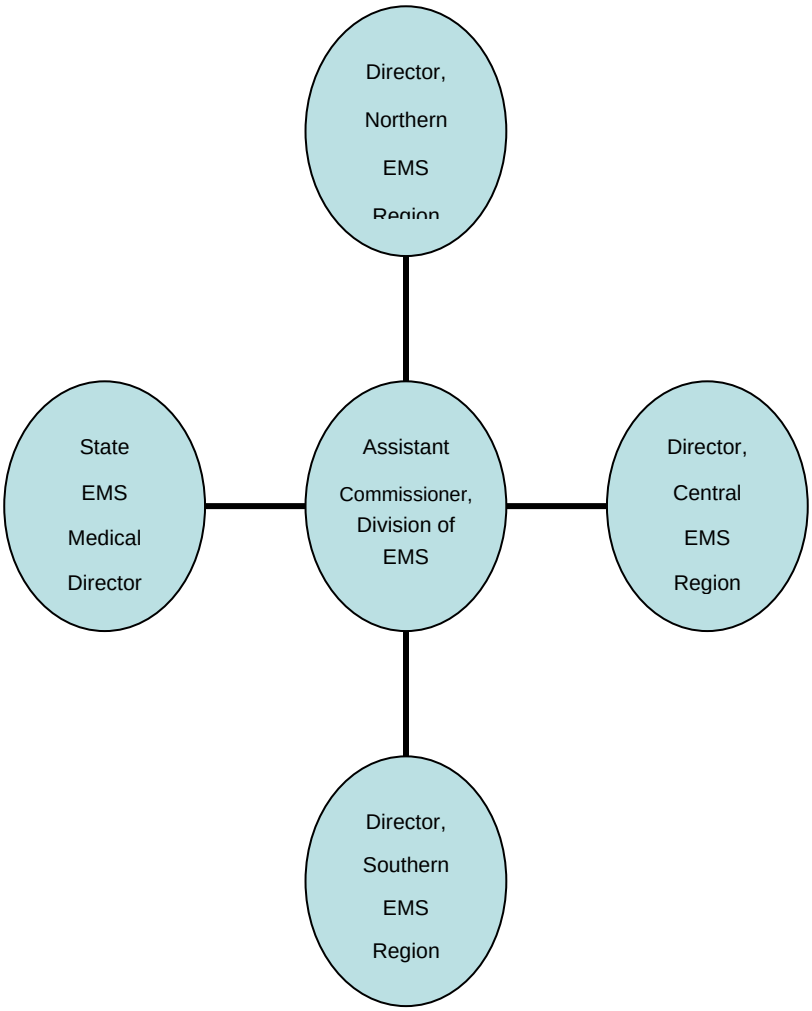
The NJDEMS state office would focus on statewide oversight matters including legislation, regulations and protocols. Efforts would include increased coordination with the State EMS Advisory Council, the Mobile Intensive Council and other components of the council.

The state EMS division's primary goal would be to oversee and develop EMS' role in health care, public health and public safety.

The NJDEMS would also take a greater role in regulation and licensing. If the licensing requirement for volunteer units is enacted, then the planning and initiation of this of this change will need close coordination.

A restructuring will allow for the beginning of regionalization for EMS. Three EMS Regional Directors should be appointed, each overseeing one designated area within the state. The EMS region would become the primary oversight authority that county and municipal governments, hospitals and squads would interact with for daily operational matters.

Figure 3: A Proposed Senior Staff Structure for the New Jersey Division of EMS



For the first one to two years, the senior staff members would work to develop the state regional program, construct and promulgate EMS legislation, form liaisons and develop regulations and procedures. Another major goal for the senior staff would be to formulate the regional process and designate what areas would be primarily state or regional responsibilities. They would also plan for any changes in the state's ALS and Air Medical delivery profiles.

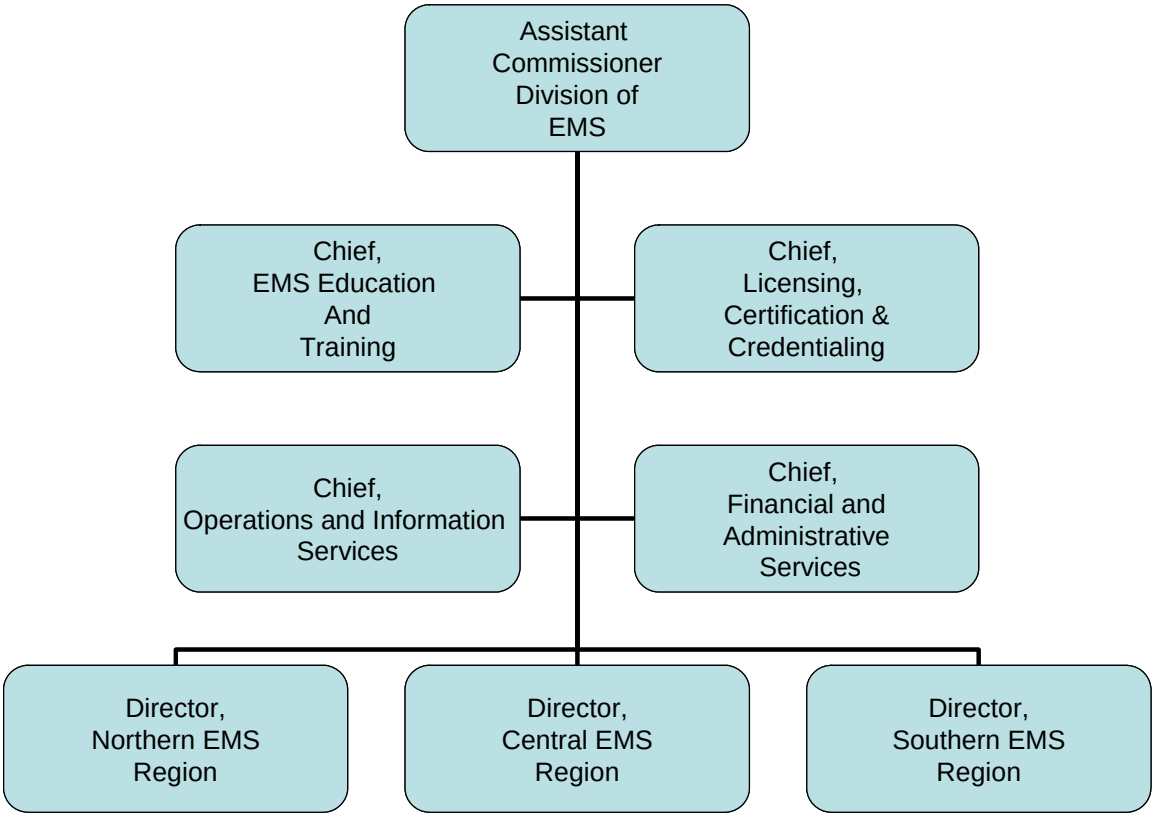
Recommendation 34: Restructure the state EMS system as described above. Immediately appoint the senior staff and have them begin a one to two year transition process for the NJDEMS. Recently, the State of Pennsylvania has upgraded their EMS oversight agency to a bureau level.

The state EMS system would include an expanded senior staff with four "chiefs" of major system components. The major administrative components would include:

- ***EMS Education and Training*** – to include all programming of basic and advanced life support education and training, Medical Priority Dispatch education and training, online and simulation training, educational institutions and continuing education providers, instructor training, EMS leadership and administration education and operational oversight of the EMT Training Fund. Also included would be the initial testing and licensure for EMD, EMT-B and paramedic.
- ***Licensure, Certification and Credentialing*** – includes the granting of licenses and certifications for all EMS provider levels, EMS program designations, EMS vehicle designations and the renewal of the same. This administrator will also oversee the medical discipline, program complaint and similar processes for the EMS system. Another role will be working with the EMS Council concerning legislative and regulatory matters.
- ***Operations and Information Services*** – will oversee the liaison between NJDEMS and other public safety entities and coordinate the State EMS Task Force. Will oversee the establishment and upkeep of a state EMS information system with emphasis on a statewide EMS database, a statewide PCR, and merging of information from county primary access points/primary dispatch points into the information system. Will serve as the primary liaison to the NJSFAC Executive Board and staff.
- ***Financial and Administrative Services*** – Will oversee the budget preparation and accountability for the EMS Division. Also works with local, state and federal payors to assist in promoting a workable financial system for reimbursements. Oversees the EMS-Children's program and is liaison for pediatric and poison center services. Maintains the appropriate liaison with trauma center authorities. This administrator

will also oversee all EMS prevention and public access programs including EMS Week activities.

Figure 4: EMS Division Senior and Administrative Staff



Regional EMS System

A regional EMS system would provide an appropriate span of control that would allow the NJDEMS to have better oversight of EMS without the need for laws and regulations that are difficult to change. The regional system would focus on the technical operations such as vehicle inspection, training site inspection, liaison with county and local EMS officials, liaison with hospital and healthcare institutions and liaison with dispatch centers. They should be closely involved with the coordination of New Jersey Task Force activities.

The regional EMS office should be the point of contact for the rollout of new protocols and procedures. Regional officials will play a pivotal role in the initial and continuing regulatory process for the licensing of NJSFAC and non-affiliated squads. They will also coordinate efforts to certify new ALS projects.

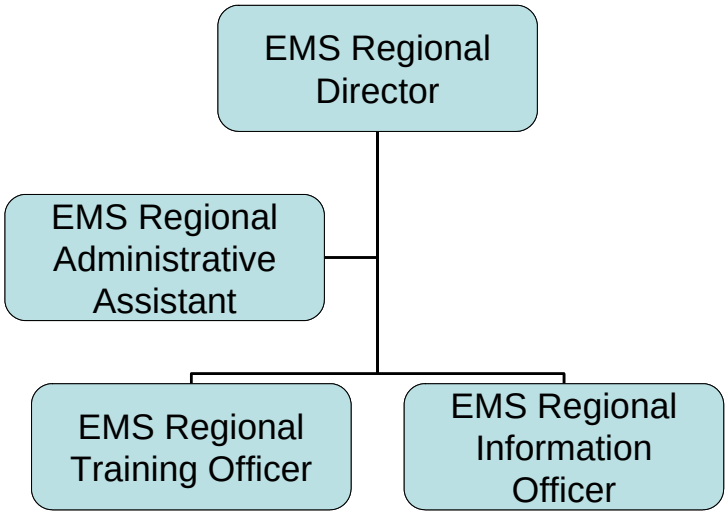
The responsibility of the regional EMS office will be illustrated in Table 2.

Table 2: Proposed EMS Regional Groupings

Northern EMS Region	Central EMS Region	Southern EMS Region
Bergen	Mercer	Atlantic
Sussex	Middlesex	Burlington
Hudson	Somerset	Camden
Essex	Ocean	Cape May
Warren	Hunterdon	Gloucester
Morris	Monmouth	Salem
Passaic	Union	Cumberland

Regional EMS Staff – The regional offices could start with a basic staff that would likely expand in the future. Initially, a regional director would be appointed to assist the NJDEMS in the transition for BLS licensing, ALS programs, EMS task force issues and legislative/regulation issues. Within six months a regional training officer would be hired for each region to assure the implementation of the additional ALS and BLS training programs needed. Within nine months, each region should hire an EMS information systems officer. This employees primary task will be to implement the division information upgrade plan that should include a statewide minimal dataset, a statewide PCR and an electronic-based PCR (Figure 6).

Figure 6: Regional EMS Office Staff



Recommendation 35: Implement a regional EMS system within the NJDEMS, with one region for northern, central, and southern New Jersey.

County-Based EMS – New Jersey's reliance on home-rule has resulted in little involvement by counties in daily EMS operations. The recent implementation of the New Jersey State EMS Task Force and appointment of county EMS coordinators signals a change. This is not a command position, but one that provides liaison with the EMS task force, interface with dispatch centers and other duties as assigned by the counties. Although not the intention of this position, it has developed into some interesting possibilities.

New Jersey should look at the possibility of greater county involvement in EMS. As described in Chapter 3, county level programs could be of assistance with EMS financing. There is also a role for oversight and supplementation of existing services. If the state requires municipalities to become responsible for EMS they may be obligated to provide financial assistance. Effective January of 1996, a state constitutional amendment was passed that limited the state's ability to enact unfunded mandates. The amendment is not absolute as there are exceptions such as compliance with federal mandates.[51]

Should states have to financially supplement a mandate requiring municipalities to provide EMS, economies of scale would favor supporting county-level services. This would not only make financial sense, but would be consistent with Governor Corzine's plan concerning the mandate for countywide 911 centers.

Recommendation 36: Encourage the development of county-level EMS oversight.

Information Systems

A critical shortfall of the New Jersey EMS system is the lack of information to measure what is done and how well it is done. The state lack of information stems from several reasons:

1. There is no statewide EMS patient care report.
2. Volunteer rescue squads are not required to complete ambulance reports.
3. Hospitals have not encouraged EMS services to submit reports. There are anecdotal reports that some emergency departments place these reports in the trash.
4. ALS and licensed BLS service that are required to complete PCRs only submit aggregate data to the NJOEMS. The lack of data for each patient care encounter compromises the accuracy of data.

[51] State of New Jersey (1996). Constitutional Amendment, Article VIII, Section 2, Paragraph 5.

5. The NJSFAC has enacted a voluntary PCR program that involves entering aggregate data via an internet program. The compliance rate is rumored to be 25%. They will not share any data with state officials and did not share data with the TriData team.
6. The NJOEMS is slow to enforce the minimal data collection requirements that exist. As of this writing, some ALS services have not submitted their 2006 response data.

What Needs to Occur – There are several actions that should occur to remedy this critical situation:

1. Development of a statewide dataset based on the NHTSA NEMSIS guidelines.
2. Development of a statewide PCR. Completion of this report is mandatory for every patient care encounter.
3. Continue the development of an electronic patient care report. Upon development, the electronic PCR should become the required report.
4. Dispatch centers should adopt the hardware and software needed to populate an electronic patient care report.
5. No exceptions should be made for volunteer squads. Regulation of all ambulances will assist with enacting with this requirement.
6. Emergency departments should attach paper or runsheet data to the patient's medical record.

These recommendations seem stringent and constraining. Unless New Jersey wants to continue the cycle that the lack of information causes, then they must adapt. To not have patient care data, system performance data or clinical practice data is shortchanging the citizens of New Jersey. There can be no tolerance for any group to withhold or refuse to participate in this process. Continuing to do so is a violation of ethical and moral standards.

Recommendation 37: Accept the above six principles as a plan for upgrading the state EMS information system.

Response Time Analysis

The sample incident dataset was obtained from a County computer-aided dispatch (CAD) system. The data included 64,392 unit response records for 24,457 unique ALS, BLS, critical care, and air medical incidents from calendar year 2005. The dataset contained records from both career and volunteer providers, although responding units were primarily career (out of a total of 52,977 unit records with valid on scene arrival data, less than 10 percent involved volunteer companies).

Because data was not available statewide, a comprehensive assessment of EMS response times was not possible. Instead, the analysis of this sample dataset serves two primary purposes:

7. To allow for a basic comparison of response times between career and volunteer providers;
8. To provide an example of the type of data collection and analysis that should be performed throughout the State to assess response performance.

In general, response time is the total elapsed time between an individual calling 911 and emergency service personnel arriving at the scene. Response time can be broken down into multiple segments for analysis (call processing, dispatch, turnout, and travel time). The sample dataset used here included response time stamps beginning at time of unit assignment. Therefore, the call processing and dispatch time segments were not available for analysis. Rather, this analysis focuses and turnout and travel times, which apply directly to the response performance of the EMS personnel.

Turnout – Turnout is the time segment that begins when the alarm is received by operations personnel and extends until the apparatus begins driving to the incident scene. National standards for career departments, such as NFPA 1710, suggest a turnout time of one minute for career providers.

Turnout times for the New Jersey sample data are shown in Table 3. 90th percentile turnout times for career agencies are well below those of volunteer providers, although average response times are similar for both types of providers. This is indicative of the smaller sample of volunteer responses as well as larger dispersion in volunteer turnout times. Furthermore, volunteer agencies generally have longer turnout times because responding personnel may not be located at a station.

Table 3: Turnout Times for Career and Volunteer Providers (One Sample Area)

	Career	Volunteer
Response Count *	47,873	4,271
Mean	1:24	1:45
90th Percentile	2:41	4:43

* Response count includes records with valid time stamps only.

In addition to the comparison of career and volunteer providers, turnout time by resource type is also of interest, as shown in Table 4. At both the mean and 90th percentile, turnout times progressively decrease based on the severity of the incident.

Table 4: Turnout Times for BLS, ALS, and Critical Care Resources (from one set of NJ data)

	BLS	ALS	Critical Care
Response Count *	31,379	18,138	2,626
Mean	1:31	1:20	1:03
90th Percentile	2:59	2:31	2:07

* Response count includes records with valid time stamps only.

Travel – Travel or drive time is the time required to drive from the station or wherever the unit is located to the scene of the incident. Station location and ambulance placement have the biggest impact on travel time, although it should be noted that apparatus are not always in the station when dispatched to an incident. Additional factors influencing travel time include traffic, weather, traffic limiting devices (stop lights, speed bumps, etc.), and driver familiarity with the area. Traffic congestion and weather are beyond the department's control; however, traffic limiting devices and driver knowledge are not.

Travel times for the New Jersey sample data are shown in Table 5. Unlike turnout, travel times for volunteer providers are less than those of career providers, which exceed the NFPA standard of 4 minutes at the 90th percentile for the first arriving unit. The fact that volunteer companies have shorter travel times than career companies is likely related to the lower percentage of responses and may also be indicative of improved station placement or response to incidents within a smaller service area.

Table 5: Travel Times for Career and Volunteer Providers

	Career		Volunteer	
	1st Arriving	Overall	1st Arriving	Overall
Response Count *	21,176	46,088	2,478	4,585
Mean	5:56	6:33	5:19	5:34
90th Percentile	10:00	11:03	9:30	10:04

* Response count includes records with valid time stamps only.

Travel times were also examined by incident type, and the results are shown in Table 6. BLS companies had shorter travel times than ALS and Critical Care providers, likely because of the larger number of BLS providers, allowing for smaller first due areas.

Table 6: Travel Times for BLS, ALS, and Critical Care Resources

	BLS	ALS	Critical Care
Response Count *	31,113	17,025	2,531
Mean	5:50	7:34	6:38
90th Percentile	9:45	12:52	11:16

* Response count includes records with valid time stamps only.

Total Response – "Total response time" includes both turnout and travel. It begins when the unit is assigned to an incident and ends when that unit arrives on scene. Normally, total response time would include the call processing and dispatch time segments as well (extending from initiation of the 911 call to on scene arrival), but call processing and dispatch could not be calculated from the available data.

Table 7 shows the total response times for career and volunteer agencies. Mean response times for each group are very similar, while volunteer response times increase at a greater rate at the higher percentiles.

Table 7: Total Response Times for Career and Volunteer Providers

	Career		Volunteer	
	1st Arriving	**Overall**	**1st Arriving**	**Overall**
Response Count *	21,165	46,077	2,478	4,583
Mean	7:25	8:01	7:39	7:59
90th Percentile	11:43	12:48	13:11	13:40

* Response count includes records with valid time stamps only.

The ability to provide this type of analysis was accomplished based on CAD data from a dispatch center. Patient care information would allow for further analysis of what EMS does.

Summary

The New Jersey EMS system is in need of an overhaul. The state's investment into the EMS system is the only way that significant change is likely to occur. The senior EMS official should be at the assistant commissioner level. In order for the state oversight organization to make adaptive instead of technical decisions, a regional approach should be adopted. This allows for decision making at the appropriate level.

County governments should be encouraged to become involved in the oversight of EMS. Investment of dollars at this level may improve the EMS economies of scale and benefit local municipalities. Above all, it will likely guarantee good EMS care to the citizens of New Jersey.

As part of the change needed there is a critical need to overhaul the state EMS information system. A requirement should be put in place for the submission and analysis of EMS data. Analyzing what EMS does is a key to determining an appropriate system design and provides a true picture of what happens.

VI. AIR MEDICAL EMS (JEMSTAR)

This chapter reports on the status of air medical EMS in New Jersey, with special emphasis on the JEMSTAR program. We evaluated air medical response, oversight and financial implications. Several decisions must be made concerning the future of Air Medical EMS in New Jersey. Guidance on these issues is provided in this chapter.

Air Medical EMS Response

Air Medical EMS response is provided primarily by state air medical transport program that is augmented by private air medical transport agencies.

JEMSTAR – Air Medical EMS response is provided by a joint venture between the New Jersey State Police (NJSP) and contracts DHSS who is with ALS programs for the medical component. Known as JEMSTAR, the program was established by legislation in 1988. The NJSP provides the aircraft and two pilots per helicopter and DHSS provides grants to the ALS programs provide two flight nurses or one flight nurse and one flight paramedic. Their responsibilities include response to out-of-hospital emergencies, critical care transports and some law enforcement duties. Air Medical transportation is also provided by private agencies that are licensed to provide back-up service for JEMSTAR for on-scene emergencies. They are also permitted to do inter-hospital transfers regardless of JEMSTAR's status. Of these licensed agencies, three are located in New Jersey.

In 2004 and 2005, JEMSTAR responded to 6,186 requests for services, about 3,000 per year or 8 per day. Of these responses, 1686 (27 percent) resulted in cancellation, 983 (16 percent) were for non-emergency missions and 2770 (45 percent) for out-of-hospital missions requiring transports.

Air Medical response is provided by two helicopters, both Sikorsky S-76B helicopters capable of traveling at 175 MPH. One helicopter is responsible for Northern New Jersey and the other for Southern New Jersey.

JEMSTAR is funded by state motor vehicles registration funds and collection of fees for the medical care transport. transport. $3.00 of each auto registration fee goes to the NJSP to finance the helicopter service except for $2.5 million that is split between the two provider agencies. All flights are billed at $1,337 regardless of third-party coverage.

NorthStar – The northern New Jersey aircraft is known as NorthStar and is located at Somerset Airport, with medical care provided by personnel from the EMS Department of the University of Medicine and Dentistry of New Jersey (UMDNJ) Hospital. Medical direction is provided by the Level I Trauma Center at UMDNJ.

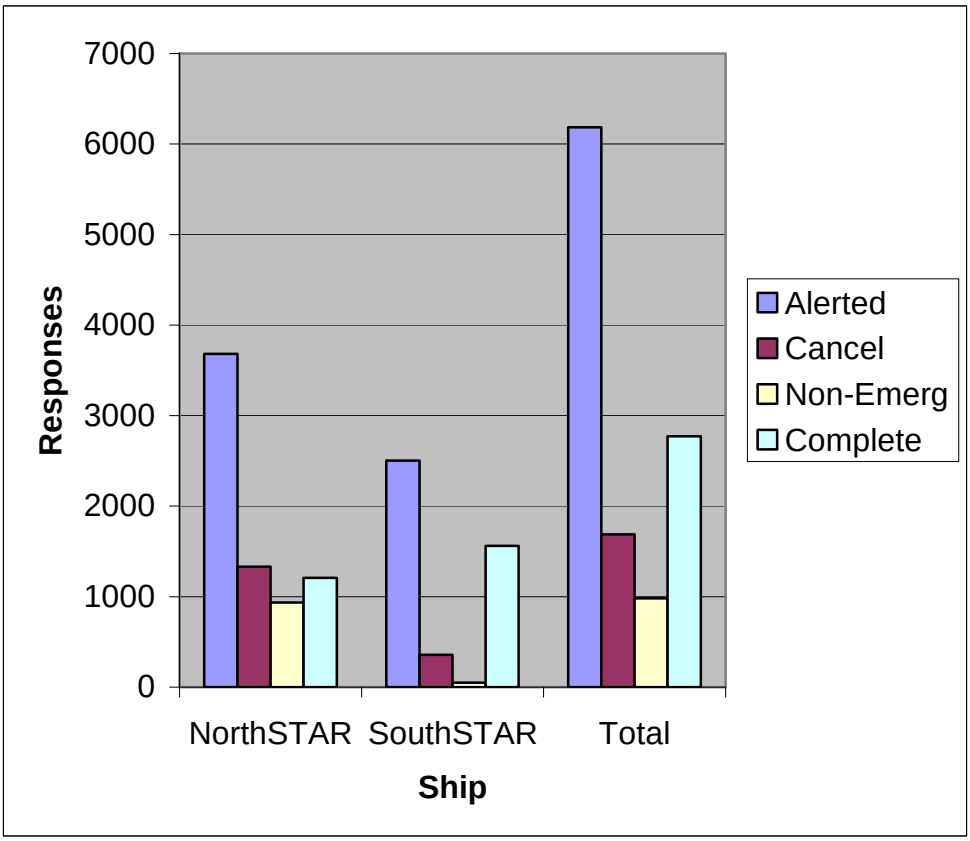
During 2004 and 2005, NorthStar was alerted for 3686 missions with 1331 (36 percent) resulting in cancellation, 934 (25 percent) non-emergency missions and 1209 (33 percent) for out-of-hospital emergency missions requiring transports. Of interest is that less than one-half of their alerts resulted in transport.

SouthStar – The southern New Jersey aircraft is known as SouthStar and is located on the grounds of the Virtua Health System's hospital at Voorhees. The medical component is provided by the Level 1Trauma Center /University Medical Center in Camden.

During 2004 and 2005, SouthStar was alerted for 2503 missions with 355 (14 percent) resulting in cancellation, 49 (2 percent) non-emergency missions and 1561 (62 percent) completed by transport. Although the number of alerts was less than for NorthStar, the number and percentage of completed transports was higher.

Figure 22 depicts the services provided by New Jersey Air Medical Programs, NorthStar and SouthStar, during 2004-2005. Services provided by private providers are not included.

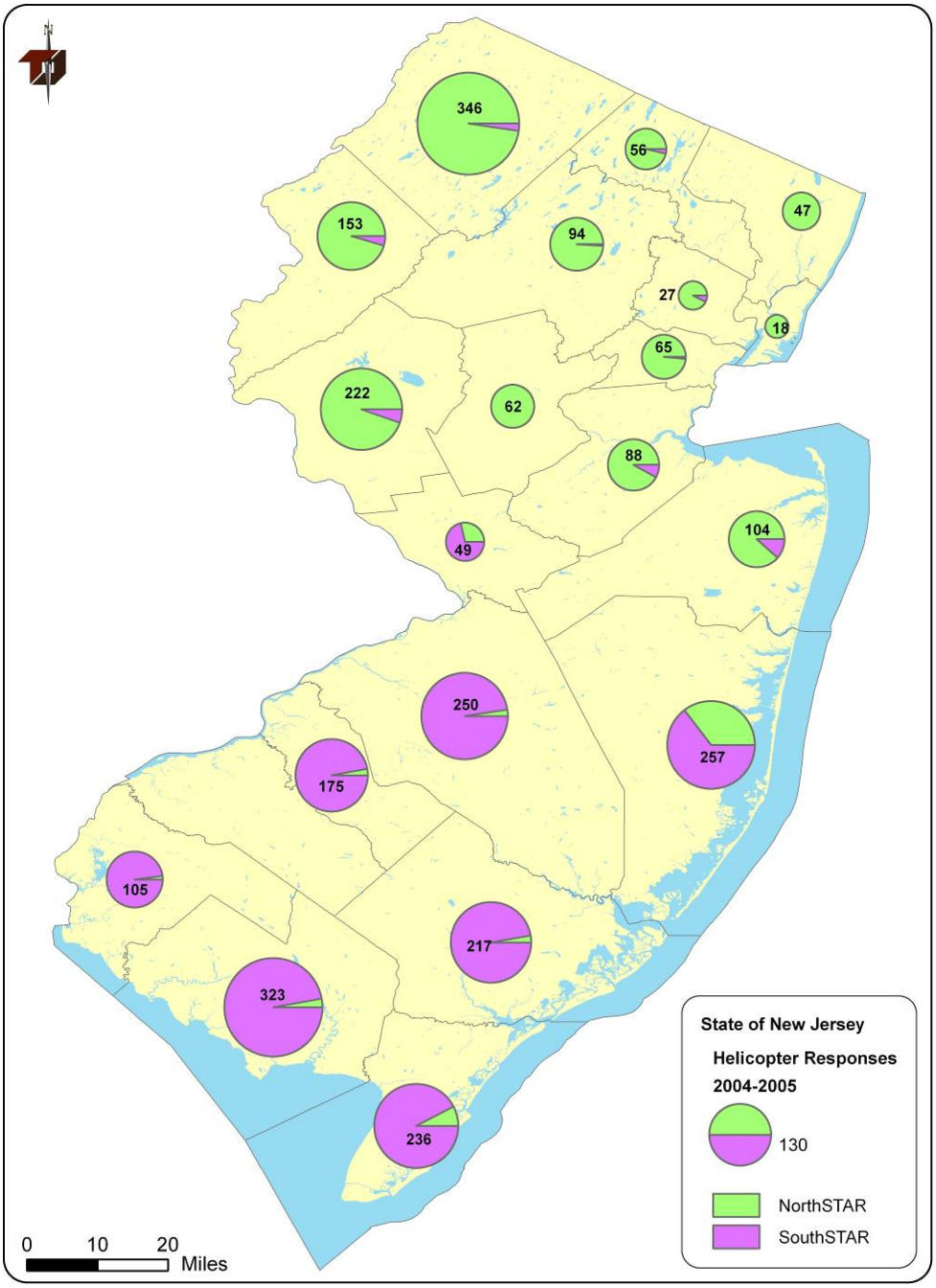
Figure 22: New Jersey Air Medical Responses 2004-2005



The location of requests for air medical service is also of interest. Figure 23 indicates the number of air medical requests by county. The requests seem to be greater in rural areas which

indicates appropriate use of services. Figure 23 should be viewed with caution as it indicates requests and not transports.

Figure 23: Air Medical Requests by County



Private Air Medical Units – There are three private air medical units that provide services. Until 2005, there were no authorized private units based in New Jersey. After legal action was threatened, the NJOEMS began to approve applications for service. These services do

not receive state funding, but are not restricted as to the rates they charge. The average cost per private helicopter transport is $10,000. Medicare will reimburse the provider approximately $5,800 per transport.

Monoc – Monoc (Monmouth-Ocean Hospital Service Corporation) is a not for profit consortium of eight hospitals in Monmouth and Ocean Counties that provides BLS and ALS to these areas. In June of 2006, MONOC placed in service a specifically configured American Eurocopter EC 135 helicopter that is located at Miller Airport, in Berkely Township.[52]

Data concerning MONOC MEDEVAC responses was unavailable to us.

Atlantic – Atlantic Health Systems Air One was the first private EMS helicopter to be approved by NJOEMS. They primarily serve to transport patients to the level one trauma center at Morristown Memorial Hospital or the Neurological Surgery Center at Overlook. Air One also serves as a back-up for JEMSTAR and responds to prehospital emergencies.

No data were available on the number of missions handled by Air One.

Atlantic City – MedEvac 5 was the first private operated air medical service in New Jersey. MedEvac 5-Lehigh/Hahnemann's ship is located at Hammonton airport with Atlantic City Trauma medical command and AtlantiCare MICU for paramedic and MICN oversight. Air One-PHI- helicopter-Morristown Memorial Trauma Center and Atlantic Health MICU for paramedic services are located in Newton.

Out of State Services – Several services from Pennsylvania, New York and Delaware provide helicopter transportation both into and from New Jersey hospitals. There are controversies with this practice, especially involving transport of critical patients across state lines. Some New Jersey hospitals feel that these situations take healthcare dollars outside of the state.

Air Medical helicopters flying patients out of New Jersey must be licensed by the NJOEMS. They are subject to the same inspection and documentation requirements as in-state programs. Several out of state services participated in this study's air medical focus group.

Unfortunately, no data was available to measure the impact of private air medical helicopters in New Jersey.

Oversight of Service – The New Jersey 2K Legislation places oversight of Air Medical EMS under the Commissioner of Health and Senior Services. Daily oversight of medical practice is under the auspices of the NJOEMS and program medical directors. Also

[52] Robbins, V. (2006*). MONOC MEDEVAC.* Available: [Online]. http://www.monoc.org/executive.cfm?IsArch=39

overseeing services is a 16 member commission appointed by the Commissioner. They function as part of the EMS Mobile Intensive Council but also provide the Commissioner with guidance on Air Medical EMS issues. The New Jersey JEMSTAR program and private programs fall under these oversight authorities.

New Jersey State Police (NJSP) – The NJSP Aviation Division provides the aircraft and pilots for the JEMSTAR program. They also provide all maintenance and fuel for the aircraft. Two helicopters provide primary service with two in ready reserve for immediate service. Each primary helicopter is staffed by two pilots and two EMS providers. The two pilot issue is controversial, but NJSP believes that their excellent safety record of no aircraft crashes speaks for itself.

$3.00 of each auto registration fee is earmarked for the JEMSTAR program. This funding goes directly to the general treasury state police, while the medical providers are reimbursed by a combination of a state grant and patient billing. This provides the NJSP with approximately $9 million annually.

REMCS is the central aviation communications center located at the UMDNJ in Newark. All emergency EMS air medical missions are dispatched from it. The center can be accessed by all public safety, medical and hospital agencies by calling one telephone number. Any prehospital response must be dispatched through REMCS. Self-dispatch or "jumping" calls by either JEMSTAR or private helicopters is a violation of NJOEMS rules. Anecdotal information indicates that on some occasions, private services have self-dispatched to emergency scenes. There are also times when JEMSTAR has declined a mission due to bad weather, but another service agrees to accept it.

Response Issues

There are several response issues that affect air medical EMS, including when should air medical services be used and how should the services be provided. New Jersey is a relatively small state whose population is concentrated in urban and coastal areas. Most patients needing trauma center or specialty services are within reasonable ground transport distance. Southern and Northwestern New Jersey are predominately rural and ground transport times are often long.

When Should Air Medical Service Be Used – The NJOEMS has provided guidelines for helicopter use. The patient must meet the criteria for multi-system trauma referral. They include:

- Estimated ground travel time to the nearest trauma center (including distance, traffic conditions and terrain).

- ETA of the helicopter including travel and patient transfer time.
- Patient entrapment and predicted extrication time.
- Number of patients seriously injured

Generally, if the ground transport travel time is greater than 30 minutes, air medical transport is appropriate. If the ground transport time is between 20-30 minutes, the provider should carefully consider the above factors in determining the mode of transport. If the transport time is less than 20 minutes and there are no mitigating circumstances, then ground transport is usually appropriate.[53]

The above guidelines are not strict protocols. In the future, these guidelines may become standards because of financial reasons. This will be discussed further in the financial section.

How Should Service Be Provided – Considerable differences of opinion permeate the New Jersey EMS system in regard to provision of air medical EMS. Until 2005, JEMSTAR was the exclusive provider throughout the state. Private air medical providers were able to convince the NJOEMS to license them to provide inter-facility transports and as back-up for JEMSTAR. Since then, private companies have attempted to become primary providers for specific areas.

A prevailing question is that of the interpretation of being "closest to the incident." While this sounds simple, it is actually very complex. To determine "closest to the incident" the system must consider several factors including: nautical miles, interval from alert to being en route, speed capability of the helicopter, and the ability to find a suitable landing zone close to the scene. JEMSTAR helicopters are on wheels and can quickly move from the hanger to the take-off zone. The other helicopters are towed to a takeoff zone, which adds time to their response. The Sikorsky helicopters used by JEMSTAR units can fly at 175 MPH, faster than those of other services.

Recommendation 38: Select often used helicopter landing areas and using the above variables, pre-determine the closest units. Upgrade REMCS and helicopter units with the appropriate tracking devices that can determine the closest units.

In June 2007, JEMSTAR submitted an updated draft protocol for the dispatch of commercial air medical units. The protocol was suggested in order to provide effective oversight, limit the state from restraint of trade liability and assure quality patient care. The basic provisos of this draft were:

[53] NJOEMS. (n.d.). Helicopter Response Program Ambulance vs. Air Transport: Fly or Drive? Available [online.]. http://www.state.nj.us/health/ems/flydrive.htm.

- JEMSTAR remains the primary EMS air medical provider.
- MedCom will continue to be the centralized point of dispatch and communications.
- If the primary JEMSTAR unit is unavailable, the next fastest commercial unit will be sent.
- If a commercial unit base of operations is within three nautical miles of an incident, that unit may be immediately dispatched.
- If a commercial unit is in flight and available, they may be immediately dispatched to the incident.

The same considerations will be given to emergency inter-hospital transfers.[54]

The draft protocol is a genuine attempt to take reasonable actions. Unfortunately, it may lead to further confusion as it fails to offer clear direction. It also does not provide for sanctions if a unit is determined to be "self-dispatching."

Recommendation 39: If the NJOEMS wishes to enact a protocol for commercial helicopter dispatch, it should be precise and easy to follow. Documentation should be kept to measure key time intervals and patient outcomes.

The ability to regulate air medical EMS is a national EMS issue. The Institute of Medicine report recommends that "states assume regulatory oversight of the medical aspects of air medical services, including communications, dispatch and transport protocols."[55]

Discipline and safety are of primary concern for organizations with stewardship responsibilities for air medical EMS. New Jersey has been fortunate to achieve the safety record it has. This safety record is not universal.

Between 1983 and 2005, there have been many instances of EMS helicopter crashes in the United States. Of the 182 EMS helicopter crashes analyzed in the study, 39 percent were fatal. A total of 184 occupants died—32 percent of the 513 crew members and 45 percent of the 44 patients.

Overall:

- 77 percent of the crashes occurred while flying in weather conditions necessitating the use of instrument flight rules as opposed to visual flight rules;

[54] JEMSTAR (2007). *Dispatching New Jersey Licensed Commercial Air Medical Units (AMU) for in-state medevac requests*. (Draft). April 17, 2007.
[55] IOM. (2007). Emergency Medical Services at the Crossroads [Uncorrected Proofs]. Washington, DC: The National Academies.

- 56 percent of the crashes occurred during nighttime flights;
- 39 percent of the total fatalities happened in crashes with post-crash fires and of all crashes with post-crash fires, 76 percent were fatal.[56][57]

The safety of citizens and EMS providers cannot be compromised. All services participating in NJ Air medical EMS must be held to a strict set of rules. Violations cannot be tolerated and must be addressed in an appropriate manner.

Recommendation 40: EMS helicopter units which are determined to have "self-dispatched" to emergencies should be subject to suspension. Repeated violations should be grounds for license revocation.

Financial Issues

JEMSTAR – Historically, allocated funds have been insufficient to cover the operating expenses of this program, both during the early years of the program and since the establishment of the dedicated helicopter fund. Due to restrictions on the NJ State Police Aviation Unit, only public funds may be used to support the aviation activities of the program. In order to close the budget shortfall, the mobile intensive care unit (MICU) hospitals providing the medical component were directed to bill the patient for medical services provided when patients are transported by the program. This fixed charge represents only a portion of the cost of the medical services provided during the flight, and is billed in a manner similar to the billing of patients treated by ground-based MICUs. Effective September 14, 1999 , the charge was increased from $535 to $1337 to cover a larger share of medical expenses and reduce the burden on the helicopter fund. The billing charge has not changed since. All MICUs are required to bill the patient for the medical services they receive; in this regard, the air medical program differs from ground-based MICUs only in the mode of transportation. This also differs from air medical helicopter services operated by commercial agencies or by out-of-state hospitals, which charge in excess of $10,000 per flight.

The NJSP is able to fund their part of the aviation program with the $3.00 per vehicle registration that is earmarked for the program. A conservative estimate is that $9 million is

[56] Hendry, J.M. (2006). Night Flights, Weather and Fire Associated with Helicopter Crash Fatalities. Merginet. Available [Online]. http://www.merginet.com/index.cfm?pg=airmed8fn=helocrash.
[57] Baker, SP; Grabowski, JG; Dodd, RS; Shanahan, DF; Lamb, MW; Li, GH. " EMS Helicopter Crashes: What Influences Fatal Outcome?" Annals of Emergency Medicine. Published online January 20, 2006 . doi:10.1016/j.annemergmed.2005.11.018.

available for the NJSP. Examining the annual revenue/expense margin for JEMSTAR revealed the following (Table 8):

Table 8: Current Revenue Model for JEMSTAR

Revenue	$9 million received from car registration ($2 million for EMS helicopter services)
Revenue	$1,337 X 1700 patients transported = $2.27 million (potential) X 60% collection rate = $1.36 million
Total Revenue	$10.36 million annually
JEMSTAR Costs	$10.36 million/1700 patients transported = $6,095 per transport
Avg. Commercial Transport Cost	$10,000

Based on the above information, it appears that the current JEMSTAR system is economical to operate. Consideration should be given to the following changes in the program:

Reallocate the vehicle registration fee from $3.00 per registration fee for NJSP Aviation to $1.50 per registration to NJSP and $1.50 per registration to the EMS system.

Remove the $2 million dollar stipend for the EMS services.

Allow the JEMSTAR EMS provider to charge the prevailing Medicare rate to all patients ($5,380 at time of writing).

This reallocates funding as follows (Table 9):

Table 9: Reallocation of JEMSTAR Funding Model

Revenue	$9 million total $4.5 to NJSP and $4.5 million to NJDEMS.
Revenue	$5,380 X 1700 patient transports = $9.15 million X 60% collection rate = $5.5 million to be allocated to the JEMSTAR providers
Total Revenue	$14.5 million
JEMSTAR Costs	$14.5 million/1700 patient transports = $8529 per transport

This is still economical and allows for shifting of resources to where they are needed. Reallocation of this funding will allow for growth of the New Jersey EMS System and fairly compensate the JEMSTAR providers while remaining cost effective.

One confounding variable to consider is the status of CMS Medicare reimbursement for helicopter transport. There are rumors (but no solid evidence) that CMS may tighten reimbursement for helicopter transports. Guideline such as those already in place by New Jersey

may become CMS reimbursement rules. EMS physicians and providers should continue to develop and validate protocols that direct patients to air medical EMS.

Recommendation 41: Adopt the above reallocation of EMS JEMSTAR funding to positively affect all aspects of the EMS System. This should be reevaluated in two years to determine if reallocation is necessary.

Commercial Providers – Licensed commercial services should have the right to provide service and be participants in the system. What cannot be guaranteed is the business needed to make this investment successful. The JEMSTAR response statistics reveal that the average number of on-scene transports is less than five daily, easily managed by two units. The size of New Jersey, the availability of trauma facilities and the existing air medical system appears to be adequate.

Commercial units that wish to continue air medical services should concentrate on inter-facility transports and remain as a back-up for JEMSTAR. Out-of-state units may affect individual patient financial issues, but a systemic effect is not evident. Based on this and the possible tightening of Medicare air medical rules, commercial services should reexamine the viability of air medical EMS services.

Recommendation 42: Licensed commercial air medical services should be allowed to function as a back-up to the JEMSTAR system. JEMSTAR should continue to revise the dispatch and response protocols to refine the current process. Commercial units are encouraged to carefully consider the profitability of commercial air medical services.

VII. ADVANCED LIFE SUPPORT DELIVERY

This chapter reviews the New Jersey Advanced Life Support (ALS) Delivery system and recommends changes for the future. New Jersey is fortunate to have excellent ALS clinical care projects. Paramedics are well-trained and an active cadre of physicians provide close medical oversight. The primary challenges to the ALS system are systemic. Financial issues are threatening the infrastructure of hospital-based ALS as they struggle to keep their ALS programs profitable and to maintain adequate staffing.

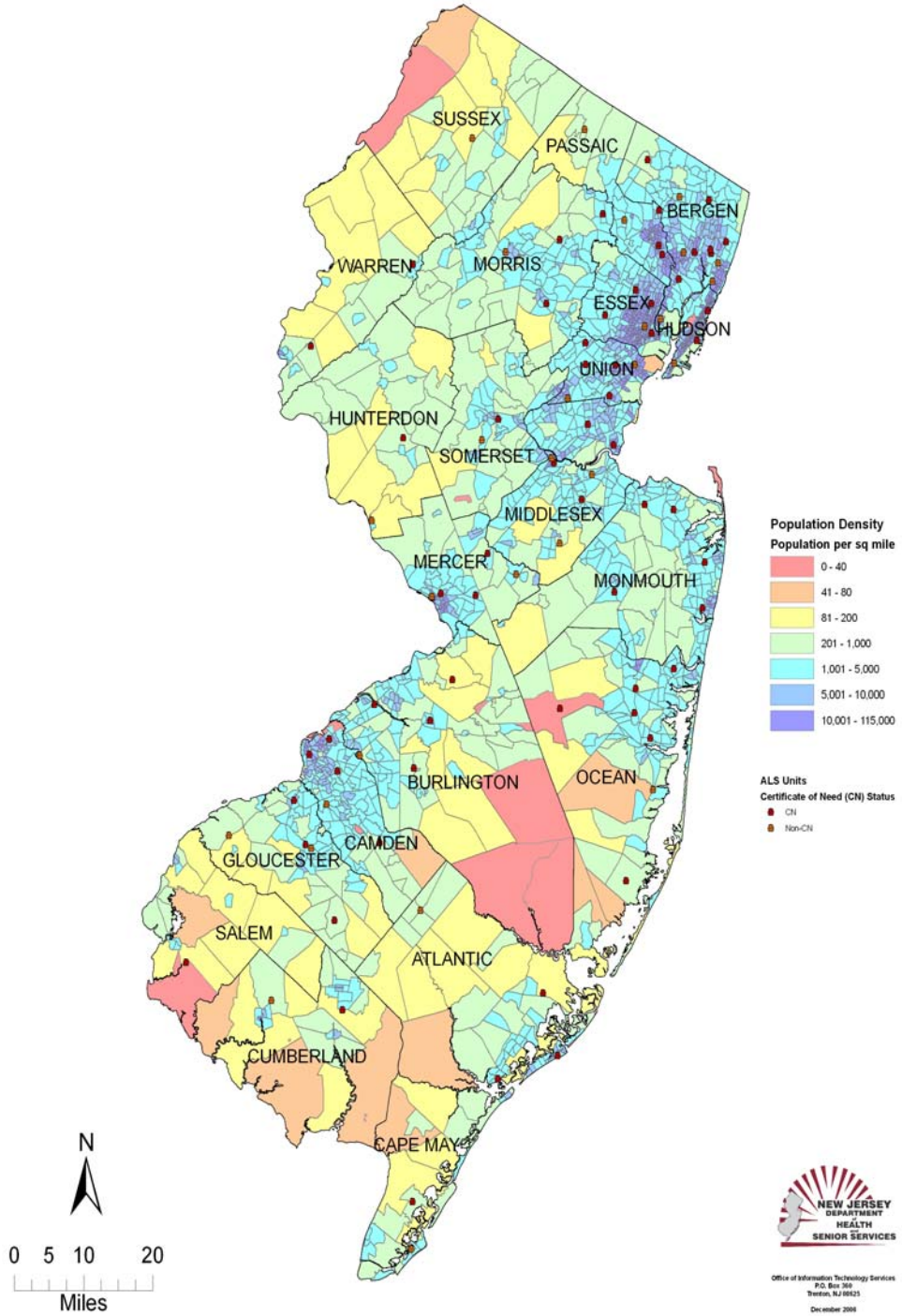
Current ALS System

There are 21 ALS "projects" authorized to provide ALS in New Jersey.[58] Each ALS project is hospital-based except for one that is a consortium of hospitals that functions as a private corporation. ALS is operated as a two-tiered system, providing ALS with non-transport units, followed by volunteer or licensed BLS units to provide transport when needed. Three projects, responding from hospitals in Newark, New Brunswick and Jersey City, were granted permission at the time of Certificate of Need designation to transport ALS patients. MONOC and any other programs with transport capable units are permitted to run ALS transport capable units that can transport if a BLS unit is not available or if they encounter a patient whose condition cannot warrant waiting for a BLS transport unit.

A majority of the ALS projects are located in larger jurisdictions and coastal areas that have higher population density. Figure 24 shows the location of each ALS project.

[58] The term "project" was originally used because the fate of ALS programs was not guaranteed. This term has stuck throughout the years.

Figure 24: New Jersey ALS Location Map

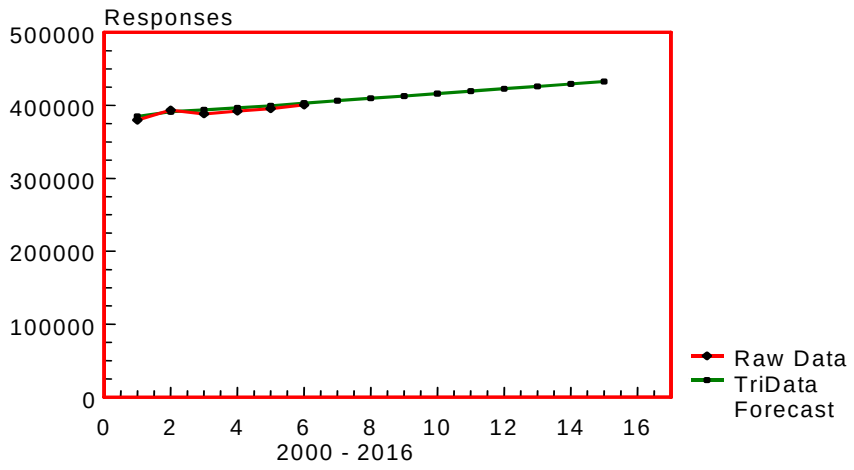


New Jersey has structured its ALS project to operate based on a "certificate of need." At the time of designations, programs had to show a need for ALS. Every municipality was assigned an ALS unit. They are required to show not only a need for ALS, but how they will provide coverage for surrounding communities that may not be guaranteed ALS coverage. Only

then will the NJOEMS issue a certificate of need and authorize the ALS project. The certificate of need requirement has allowed New Jersey to assure 100 percent ALS coverage throughout the state, an accomplishment that few states can boast. To keep their certificate of need, ALS projects must provide services described in their application and no change their response plan without NJOEMS approval. NJOEMS carefully reviews requests for changes to prevent jeopardizing the 100 percent ALS coverage goal. ALS projects must also agree to provide services to areas that are not served by ALS projects. Often, these services are "pro bono," as there is not guarantee of reimbursement.. When profitability was greater, this requirement had little impact. A decrease in profits has services crying foul at the requirement to provide this high financial risk care. Recently, an ALS provider chose to reduce ALS coverage, potentially leaving an area without ALS service. The NJOEMS was forced to intervene to assure ALS coverage.

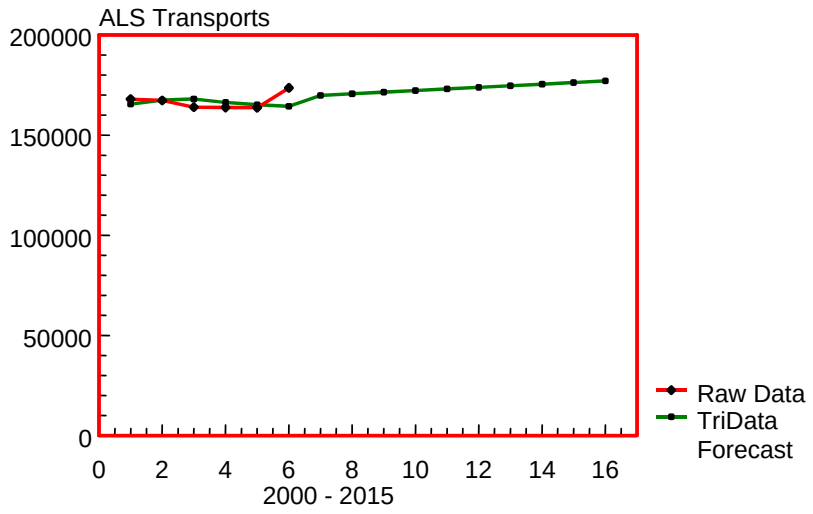
In 2005, New Jersey ALS projects responded to over 400,000 calls for service. The number of requests continues to slowly rise even though New Jersey's population is decreasing. By 2015 the number of requests should exceed 425,000. This is happening because the senior citizen and minority communities are increasing, generating greater requests for services (Figure 25).

Figure 25: MICU Call Forecast Model Through 2015



For 400,442 ALS dispatches, only 173,535 (43.34 percent) required transport. Excluding a relatively small number of physician-directed termination of CPR cases and DOA's, most cancellations were due to ALS not being needed (Figure 26).

Figure 26: ALS Calls Requiring Transport-Forecast Until 2015



Medical Priority Dispatch and ALS Response – Although 2005 showed a slight increase in the percentage of calls requiring transport, 2006 and 2007 data will be needed to determine if the long-term trend is changing. Chapter 3 identified possible reasons for the high number of ALS cancellations. Three items are expanded upon to emphasize how poor dispatch procedures have negatively affected the ALS system.

1. Primary dispatch points are not following MPD protocols, resulting in too many calls being dispatched as needing ALS response. With little quality management, dispatchers may inflate the dispatch level of a call to provide a margin of safety. While this seems logical, operating out of fear instead of following the protocol causes unneeded dispatches, poor economies of scale and compromised provider and citizen safety. The effectiveness of medical priority dispatch protocols has been questioned for certain situations, but has been validated as a method to identify low-priority calls that do not need advanced level care.[59] Another study done in Salt Lake City, UT reached similar conclusions.[60]

Concerns about the effect of MPD have often been overlooked due to lack of supervision, low volume systems with less experienced operators, or high volume systems that are not properly staffed. In our experience, dispatch centers that attempt to provide MPD but do not

[59] Hinchey, P., Myers, B. and Zalkin, J. Low Acuity EMS Dispatch Criteria Can Reliably Identify Patients Without High Acuity Illness or Injury. *Prehospital Emergency Care, 11*(1), 42-48.
[60] Shah, M.N., Bishop, P., Lerner, E.B., Czapranski, T., and Davis, E.A. (2003). Derivation of emergency medical services dispatch codes with low-acuity patients. *Prehospital Emergency Care, 7*(4), 434-9.

include the quality management tools of real-time forced-choice for dispatchers, case review, supervision and medical direction are often disappointed in the results.

EMS systems must invest in quality management at the PSAP. Without proper integration of the initial step of EMS care, no other recommendations are likely to come to fruition. If this isn't fixed, the same over-dispatch will continue.

Recommendation 43: Quality management of medical priority dispatch must be established for ALS services to be efficient.

2. Dispatching of ALS units as a back-up to for BLS units to prevent extended response time. Towns use ALS to be first responders just to get someone there. To a political entity this seems a logical use of service. If several nearby units fail to respond, at least someone will respond. Unfortunately, this overuses ALS services especially those who cannot provide patient transport. An alternative in communities where this occurs is for the fire service to assume more first responder obligations.

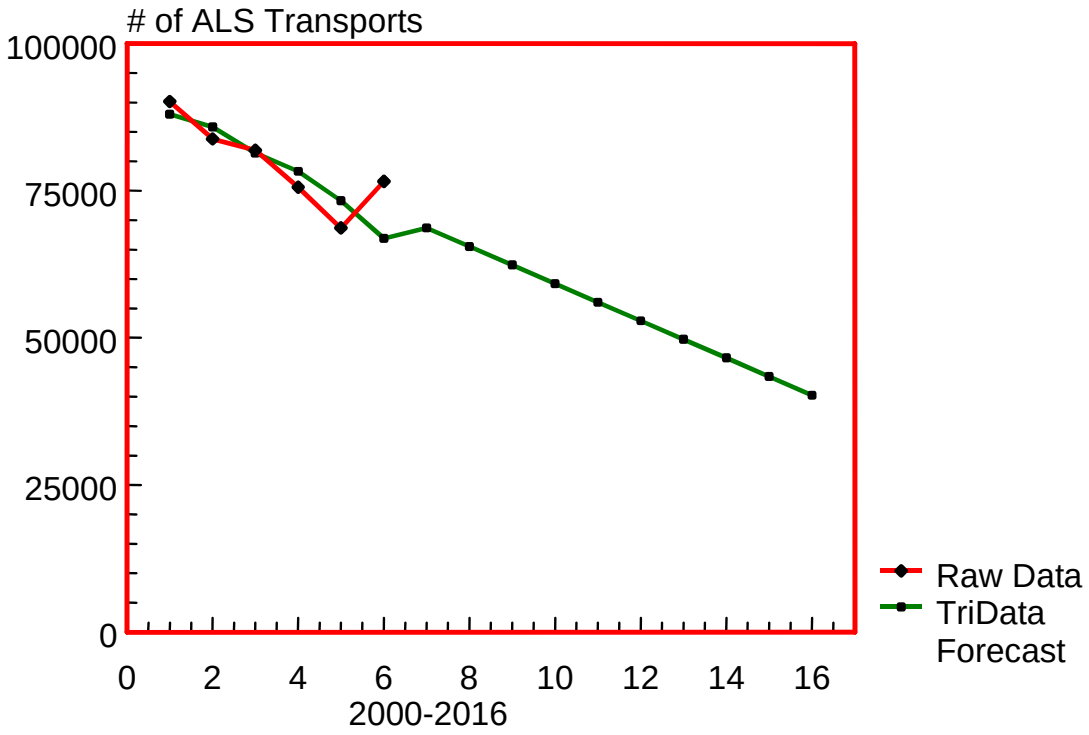
Recommendation 44: Eliminate the use of ALS projects as de facto cover for BLS services. Consider using commercial services for back-up BLS transportation or fire services for BLS first response.

3. Several focus groups provided anecdotal information that BLS providers have become over-dependent on ALS providers. New Jersey's restrictive protocols also limit when ALS providers can assess the patient and allow for BLS transport. Medical directors should determine which patients could safely be turned over to BLS post assessment or care.

Recommendation 45: Medical directors should determine which patients ALS units can transfer care to after assessment or treatment.

Lack of BLS Transport Services – Another threat to New Jersey ALS is the availability of BLS transportation in some communities. With exception of the services listed above, ALS units are only permitted to operate as non-transport "chase" units. In 2005, a seminal event occurred when for the first time the majority of ALS patients were transported by licensed ambulances, by a ratio of 48 percent to 44 percent over volunteer squads. An analysis of data between 2000–2005 revealed that the percentage of ALS patients declined. Projection analysis indicates this trend will continue through 2015.

Figure 27: ALS Patients Transported by Volunteer Squads, 2000–2005



The above data indicates a potential problem with ALS service and EMS response in general. As data were not available concerning overall responses by NJSFAC and non-affiliated volunteer services, the above data indicates that volunteer services are declining and are likely to continue to do so. Action should be taken before volunteer problems become critical. Allowing ALS projects to transport patients or using commercial services may bridge the gap left by the reduction in volunteer BLS transport services.

Regression models support the above information. They indicate that as the total number of completed ALS calls increase, the number of these patients transported by volunteer ambulance services decreases.[61]

Recommendation 46: Allow ALS projects to provide patient transportation.

ALS Project Viability – A paradox exists between ALS care and ALS project viability. The two-tiered system appears to facilitate the delivery of good patient care. Paramedics are well trained and their scope of practice covers the basic services that they provide. In general, ALS projects have intense medical oversight by qualified physicians who are active in the daily unit

[61] A Pearson's Product Moment Coefficient indicated a correlation factor of .76 for the number of ALS alerts in relation to ALS transports and -.89 for the number of transports and the number of transports handled by volunteer squads.

operations. Each project has a quality management component that is administered by EMS physicians and EMS providers who are dedicated to assuring that only the most qualified professionals are credentialed.

The paradox occurs when evaluating the continued viability of hospital-based projects. During the 1970s through the mid 1990s, ALS projects were profitable for hospitals. While specific data are not available, anecdotal information indicated that reimbursement rates were acceptable and that projects drew patients to the sponsoring hospitals. From a financial perspective, this has clearly changed. ALS projects that rely on outside agency BLS transportation providers are not able to earn sufficient Medicare/Medicaid funds to assure profitability or break-even status. In May 2007, the United State General Accounting Office (GAO) reported that this gap will continue to increase. On average the margin between Medicare payment and costs will be – 6 percent (95 percent Confidence Interval. = -14 to 2 percent). For hospital-based services who do not share costs with governmental entities, translates to an average Medicare payment of $394 and a cost of $415 per transport.[62] Compared to all areas, margins in urban areas are consistent with an average reimbursement of $350 reimbursement to an average cost of $370.[63]

This shortfall affects non-transport ALS providers because as the cost of BLS transportation increases, there is less to negotiate for. What appears to be a gain for BLS providers and a loss for ALS providers will likely backfire as the economic viability of the ALS system must be a concern for all. To keep the current model, BLS services may have to make some sacrifices to continue the viability of ALS.[64]

We suspect that hospitals are considering the financial viability and future of ALS projects. One hospital in northern New Jersey was advised by a consultant to discontinue its ALS project and force local municipalities to take responsibility. Municipalities can bill for service and use tax bases to fund their services making financial viability less problematic.

During our visits we had opportunities to read publications encouraging people and businesses to make New Jersey their home. These publications featured advertisements introducing the features of quality medical care available. Most of these advertisements featured advanced cardiac, stroke and trauma care as their prime products. Even though the success of these advanced care projects depend greatly on EMS, none of the advertisements featured their

[62] GAO. 2007. *Costs and Expected Medicare Margins Vary Greatly*, 23-24.
[63] Ibid., p. 24.
[64] Wolfberg, D.M. and Wirth, S.R. (2004). ALS/BLS Intercepts: *The Clinical and Legal Aspects of Tiered EMS Systems.* Mechanicsburg, PA: Page, Wolfberg & Wirth, LLC.

ALS units or pictured an EMS professional. This was not a slight, but an indication that many healthcare systems are not appreciating the value of EMS. Therefore, no one should be surprised that they may be considered expendable.

Another threat to project viability are human resources issues. New Jersey ALS projects have been blessed with a cadre of providers that have spent many years with their project. The time has arrived that many of these providers are reaching retirement age. Unfortunately, hospital-based EMS projects rarely offer the guaranteed pension benefits that municipal providers offer. The closest benefit to this is 401K plans that require the employee to have contributed over the years to earn enough to live on. There are very few paramedics who have been able to retire without having to continue full-time work. While working, many of these providers already work for two or more ALS services. In comparison, EMS providers who are firefighters or police officers have access to a premium pension project. Even those municipal providers who are eligible for only the civilian employee plan (PERS), have good pension plans.

This issue will be discussed further in the EMS Workforce chapter.

Too many or too few paramedics? – As of 2007, New Jersey had 1,450 practicing paramedics affiliated with ALS projects. Many paramedics work for more than one project. There is a perception that a paramedic shortage exists within the state. It is difficult to determine whether the problem lies with numbers or distribution. The NJOEMS requires that prehospital ALS units must be staffed with a least two paramedics. This includes both transport and non-transport units. Many paramedics and medical directors like the two paramedic system because they believe it provides better patient care. Unfortunately, these beliefs have not been quantified in New Jersey or anywhere else. A study in Melbourne, Australia revealed that a mixed PM/EMT crew had no difference in skill success rates and slightly shorter on-scene times than a two PM crew. The two PM crew accomplished more ALS procedures than the paramedic/EMT-B crew. This study can only be viewed as an indicator because it was not large enough to make significant conclusions.[65] Unions in New York and Chicago fought the reduction of two paramedics to one paramedic and one EMT, but were unable to offer concrete evidence to support their concerns.

There are several options to consider regarding the one or two paramedic requirements. There is general agreement that many ALS-level calls can be successfully managed with one-paramedic and one-EMT. There are probably a small number of ALS patients who could benefit from having a second ALS provider on-scene. The challenge is to provide the best levels of care

[65] Ludwig, G. (2005). How many paramedics does it take to… *EMS Responder*, [Online Version], November 1, 2005, http://www.emsresponder.com/print/Firehouse-Magazine--EMS-Features...

within human resources and financial means. Larger ALS projects could modify their response profiles to field transport units with one-paramedic and one-EMT and have a district supervisor vehicle available for high-level emergencies. County governments could assist by providing supervision and in-turn the second paramedic. Another option is for fire first responder agencies to provide a paramedic who could be available to assist the transporting paramedic as needed.

Recommendation 47: Modify legislation and regulation to allow ALS transport units to be staffed by one paramedic and one EMT and non-transport units to be staffed with one paramedic. The ALS project medical director can mandate minimum staffing for the specific unit.

Recommendation 48: EMS organizations should be allowed to provide ALS if they meet the project guidelines set by the NJOEMS.

There is a saturation point where too many paramedics can be trained and licensed and not enough opportunities are presented to practice and maintain medical skills.. In some areas, there are not enough chances to provide skills because there are too many paramedics. Some public safety agencies believe that everyone should be a paramedic. Evidence is beginning to show that too many is as bad as too few. It is better to have a smaller cadre of professionals that are well trained than trying to train everyone.[66] New Jersey should continue this philosophy.

Strategic Benefits to Minimum Crew Modification – New Jersey should benefit from the move to a minimum of one paramedic for the following reasons:

- The same number of units can be staffed with less paramedics.
- A limited number of paramedics will allow these providers to develop and maintain the skill expertise needed to provide effective care.
- As decision making and interventions continue to increase in complexity, medical directors should become more confident in their providers and less reluctant to add to the EMS scope of service/practice.
- The EMS system will have several choices in how to supplement care. If a hospital-based system responds with one paramedic, a fire or police first responder unit, staffed by a paramedic, may supplement care and quickly return to service. This keeps ALS response available while the primary provider is transporting.

[66] Davis, R. (2006). Fewer paramedics means more lives saved. USA Today, May 21, 2006. Available: [Online.]. http://www.usatoday.com/news/health/2006-05-21-paramedics_x.htm.

- There is no evidence that supports having two paramedics instead of one providing ALS skills. The EMS system can no longer afford to operate on assumptions that lack data.
- A one paramedic response unit will be able to provide a paramedic in training with more opportunities to practice skills under supervision. Paramedics field training should be more meaningful.
- If some programs choose to keep the two paramedic minimum, data could be collected to answer the one vs. two paramedic question.

Emergency Medical Technician-Intermediate

The National Registry of EMTs offers a certifications at an intermediate level between EMT-B and EMT-P known as EMT-Intermediate (EMT-I). EMT-Is are trained beyond the EMT-Basic level to perform skills such as cardiac monitoring, IV access, medication administration, oral endotracheal intubation and similar skills. EMT-I training can be accomplished in one-third the time of paramedic training and allows for a considerable number of skills to be performed.

With the above said, we do not feel that EMT-I is appropriate for the New Jersey EMS System for the following reasons:

- It could produce a rapid demand for training courses that will overwhelm training assets.
- What appears as a quick way to train ALS providers is false economy as many systems do not support the skill maintenance level necessary, the turnover rate is high, and the quality of care may be questioned.
- Systems may not be able to afford the increased training costs, medical direction costs or insurance for increased liability.
- The current paramedic cadre is well-directed and providing excellent care. The main issues involve the delivery system.
- Adding another licensure/certification level will cause poor time use issues for a limited state regulatory staff.
- Medical oversight at all levels becomes more cumbersome and system control becomes more difficult.

While the concept of EMT-Intermediate merits implementation is some areas, is not right at the present time for New Jersey.

Recommendation 49: New Jersey should not pursue adding EMT-Intermediate as an EMS provider level.

Potential Provider Organizations

There are several organizations that could take a larger role in providing or augmenting ALS services in New Jersey. This section identifies the challenges associated with these potential new providers.

The Fire Service – In many parts of the country, the fire service provides all or part of ALS service for its community. Initially, New Jersey had a few fire departments with pilot ALS projects, but these services quickly yielded to the present system. With some notable exceptions, New Jersey's fire service has not shown significant interest in providing ALS services. Many departments still do not provide first responder BLS. The reasons for this are many, but a historical marker can be identified. When the current 2K legislation was enacted, volunteer BLS squads were much stronger and provided more services. The fire service was *excused* from EMS obligations, which was welcomed by traditional fire departments.

Today, the playing field is different. Some New Jersey fire departments provide BLS first responder or BLS transport services. The desire to perform ALS is not overwhelming, but some services have expressed an interest such as the Cherry Hill, Ocean City, Asbury Park and Hackensack Fire Departments.

Some may desire to provide full ALS service while others may wish to limit provision to first responder ALS leaving transportation to current sources. In these situations, success depends on definitive project standards and strong medical oversight.

Municipal EMS – There are opportunities for municipal, non-fire service EMS systems to provide ALS. These opportunities will likely be confined to full service ALS, but "chase car" services to areas where volunteer or commercial BLS provide transport are possible. This also includes police agencies who are performing EMS. Tom's River has expressed interest in providing ALS services.

Another model of municipal ALS (that could include fire) is a countywide system. The county could become the ALS provider or take over supervisory responsibilities at an operational and administrative level. The county might, for example, provide ALS supervisory personnel whose primary duties would include quality management, data analysis and training. They also would be available for field supervisory duties and supplement when an additional ALS provider

is needed. Primary ALS responders could respond with one paramedic and a supervisory could respond to calls assigned to "Level E." If, as we recommended in Chapter 3, counties could become the licensed billing agent for all EMS services, then these supervisory personnel could play a greater role.

Commercial EMS – Commercial services that might provide ALS service but see it being a considerable financial and legal risk, and may find it not worth taking. Only those commercial services who have the capital, understand the risks and serve in areas that have the need, should consider this venture. Commercial services should consider providing emergency BLS services in areas that are underserved by volunteer providers.

Hospital/Hospital Consortiums – While some hospitals may choose to opt out of ALS services, others may find opportunities. There are good reasons for hospitals to continue ALS provision. The medical care provided is usually superior and medical oversight is usually strong. Those services that are willing to invest in their personnel and can remain financially solvent may find great benefits from continuing or adopting ALS services.

New Jersey's hospital-based system has a major flaw that prohibits full use of ALS providers. The current 2K statute prohibits ALS (or any EMS) providers from performing skills in a hospital setting except during training. Legislative restrictions have lead to vast under use of skilled personnel. Some believe that eliminating restrictions would improve the skills of paramedics.[67]

Another caution to consider is the aging workforce of hospital EMS providers, with many ALS providers being in their 50s and 60s. Adding transportation duties to these providers may lead to earlier retirements due to increased physical demands (lifting and carrying).

Volunteers – There are many counties, cities and towns that rely exclusively on volunteer ALS services. While their numbers are decreasing, some continue to provide excellent services. This could be true in New Jersey, especially in areas where squads merge into strong organizations that can guarantee response and quality management. Realistically, we believe that there is little interest from New Jersey volunteers to embark on this effort.

Organizations other than hospitals can successfully provide ALS services. They can provide full ALS services or supplemental ALS first response. Counties can take a stronger role in assuring the best economies of scale while keeping the high level of care. There are several cautions for organizations who are considering adopting ALS:

[67] IOM (2006). *Emergency Medical Services at the Crossroad.* Institute of Medicine. Washington, DC: National Academic Press.

- The temptation to classify ALS personnel into lower paying positions with little room for promotion or professional development.
- ALS not being a priority, therefore being neglected.
- Believing that ALS remunerations will solve municipalities' financial woes.
- Not realizing the training commitment required for ALS.
- Municipal public safety leaders sharing their power with medical directors and other state regulators.
- Cultural changes in organization, as ALS service tends to increase participation by women and minorities. The organization must be able to make this advantageous for their service.

Adding ALS to public or private organizations is not easy. There are many sacrifices and many changes organizations will have to incur. Above all, if an organization cannot commit to fulfilling the high standards needed, IT SHOULD NOT TAKE ON ALS. The NJOEMS needs to prepare for organizations wishing to provide ALS by:

- Refining the application process.
- In conjunction with the MICU Advisory Committee and selected organizational constituencies, create a clear set of standards that must be met by applying organizations. Balance must be maintained to assure strict guidelines without making it impossible to qualify.
- Consider establishing pilot projects for the two years of expansion, with the first year concentrating on training, quality management development, establishing appropriate medical direction and assuring plans for financial survivability. The second year should concentrate on implementation and evaluation of services.
- ALS projects ready to proceed should not have to wait out an entire year to be operational.
- Financial projections and due diligence should be done before an ALS project is approved.

ALS Financing – It is difficult to predict what needs to be done as the future for reimbursement remains unclear. The Institute of Medicine Report pointed out that there is a $600 million shortfall nationwide in EMS reimbursements. A great paradox continues to exists where an EMS systems cost is based on a readiness capacity, but reimbursement is based on

transportation. The results of this paradox significantly effect low-volume systems, mainly in rural areas, and non-transport response systems (common for New Jersey ALS).[68]

While the EMS industry is unclear on the future of financing, many predict that little will change in regards to CMS federal reimbursement. As most ALS projects have become dependent on federal reimbursement, they will continue to experience frustration and look for ways to maximize returns. In Chapter 3 we recommended a county-wide approach to billing that may offer a better outcome for ALS services. ALS non-transport units serving areas of limited transport services should consider the benefits of providing transport.

Summary of Findings

After reviewing the issues involving the future of ALS in New Jersey, we offer the following summary of findings.

- The current ALS model allows for excellent ALS care, proper medical direction and good quality management.
- The hospital-based ALS system is in jeopardy as profitability for hospitals, using ALS as a means of patient catchment and inability to afford paramedic salary and benefits may make service prohibitive.
- A graying workforce may lead to a large turnover of paramedics, especially if a transport role is added.
- ALS provision should be permitted by non-hospital agencies. A strict set of standards should be in place prior to new services beginning.
- Municipalities should consider alternate delivery models such as fire service paramedic first response, hospital/municipal agreements and countywide EMS systems. These may maximize patient care while assuring economies of scale. One idea is to allow the municipality to provide ALS service and hospitals to provide quality management and medical direction.
- At this time, EMT-Intermediate is not likely to benefit New Jersey.
- One paramedic and one EMT should be the minimum crew for ALS transport units. Non-transport ALS units could respond with one paramedic. Local medical directors may continue to require two paramedics on each ALS unit.

[68] Ibid., p. 36.

- ALS financial issues are likely to continue. A county-based financial project may provide a steadier cash flow.

VIII. EMS WORKFORCE

The workforce is the most important factor in providing effective EMS. It is also the biggest challenge that faces EMS now and in the foreseeable future. There are social, technological, economic, environmental and political issues that affect the EMS workforce. As in most northeast states, New Jersey's diversity of people, geography and industry increases the challenges of providing a workforce that can meet the current and changing challenges of providing EMS.

For the purpose of this report, the term "workforce" refers to EMS providers in all areas, of all licensure/certification levels and career or volunteer status. Any issues specific to a particular segment of the workforce will be specifically noted.

The Institute of Medicine report identifies several workforce challenges that are common to EMS nationwide. These include:

- Recruitment and retention of personnel.
- A lack of nationwide training requirements leading to a wide range of quality of care.
- The dangers of prehospital care including risk of violence, infectious and contagious diseases, risk of terrorist incidents and dangers from ambulance crashes.
- Low pay and benefits, especially prevalent among providers outside the public safety sector.
- Being considered second class citizens by other public safety professionals at the federal, state and local levels.[69]

Career EMS Providers

Career EMS providers are those who work full-time providing EMS for one or more services. Challenges to career services are more common than one would think. The items listed in the previous section apply to both services. Regardless of the challenges, most EMS providers enjoy their profession.[70]

Second Class Citizenry – There are problems inherent to New Jersey EMS that demand attention. Those choosing EMS as a career, who are not either firefighters or police officers, do not receive compensation and benefits equal with their fellow public safety

[69] IOM, (2007), p. 31.
[70] Ibid., p. 97.

providers. In June of 2007, New Jersey EMS providers were sadly reminded of this when a paramedic treating a patient, died of sudden cardiac arrest. There were no line of duty death benefits, no funeral benefits, no pension benefits for a surviving spouse or children, no access to scholarships for his children or no other benefits that police officers of firefighters would receive. EMS providers who suffer on the job injuries are also not covered by a line-of-duty disability benefit.

Firefighters and police officers are part of the State Police Fire Pension System. After 25 years of service or at age 50, with 20 years of service, they can retire with a lucrative pension of at least 50-60 percent of their final salary, with medical benefits. EMT-Bs who work for public safety agencies but are not firefighters or police officers, are eligible for retirement from the PERS program. This pension program takes longer to qualify for and pays out lower benefits. Hospital-based paramedics can usually contribute to a 401K, but have no guaranteed pension plan. In summary, EMS providers are clearly second class citizens in regards to pension and disability benefits.

Unfortunately, the timing of this is poor. Public pension systems are under public scrutiny, with some experiencing under funding. Pension funding has been a particularly sensitive issue in New Jersey resulting in significant media coverage. The Fire and Police Pension System contributors are reluctant to let new people into their pension system. An option, albeit a less than desirable plan, is to create a special classification in the PERS system that allows paramedics to have similar benefits to firefighters and police officers. This is similar to a benefit granted to fire investigators, who are not classified as firefighters.

Recommendation 50: Allow non-firefighter paramedics and EMT-Bs into the Fire and Police Pension System. Alternatively, create a special section in PERS for paramedics and EMT-Bs.

Medical Cross-Training and Advancement – Career advancement is another important issue for EMS providers. Currently, EMS providers who work for fire and police departments may have the opportunity to promote into management positions. Non-public safety providers have fewer opportunities. To increase salary and benefits, many providers have become nurses or other mid-level health care providers (physician assistants, respiratory therapists, nurse anesthetists, etc.). Others have become health system administrators working in various aspects of health care. This should not be viewed as negative, but these options usually involve an experienced provider having to leave EMS. Often, these providers are forced to repeat basic training programs that they may have recently completed.

In contrast, there are many technician and mid-level healthcare providers who have become EMS providers. This is a positive step that should be encouraged. Unfortunately, the

ability to crossover into EMS is often difficult, requiring those interested to repeat basic training programs that delay entry into EMS.

Recommendation 51: Encourage EMS and other healthcare professionals to cross-train, but provide a career path for those wishing to make EMS a career. Education programs build bridges instead of walls for those wishing to further their education.

Learning to Lead and Manage – EMS leaders often ask for additional education in leadership. Many who have completed paramedic or EMT-B training wish to pursue bachelor or masters level programs to begin mastery of the growing EMS body of knowledge. General leadership training is available at community colleges and universities, but little is directed toward EMS.

The National EMS Management Curriculum Committee of the Fire and Emergency Services Higher Education Council (FESHE) has developed four working management level definitions using public safety and EMS industry practices:

- EMS Supervisor: A crew chief or leaders of a single unit or crew.
- EMS Manager: Manages more than one crew or supervisor
- EMS Chief Officer: Oversees more than one manager, is responsible for a major component of an EMS organization, middle manager.
- EMS Executive: Head of the organization or senior staff.[71]

FESHE also reviewed several EMS college curriculums in an attempt to identify standard courses for EMS managers. Many of these courses are available at local colleges or by distributive learning.

Recommendation 52: New Jersey community colleges and four-year colleges who provide EMS management programs should consider adopting the FESHE curriculum. Training programs should target the four EMS management levels identified above.

Recommendation 53: EMS managers should take advantage of EMS training programs sponsored by the National Fire Academy, the American Ambulance Association and other private organization.

Early Exposure to EMS – A possible method to entice youth to consider EMS as a career is to provide early exposure through school career development programs, youth programs such as scouting, Explorers, Civil Air Patrol, and faith organizations. They often provide an excellent introduction to EMS. Encouraging participation in volunteer EMS also helps with

[71] FESHE., (2006). *National EMS Management Curriculum Committee: Inaugural Draft Meeting Report, Draft #2.2.*, p. 30

exposure to EMS as a possible career. The volunteer service is as close as it gets to gaining the valuable experience and getting exposed to the realities of an EMS career. Our citizens, our organizations and our youth can benefit from this.

Recommendation 54: Schools, social organizations and volunteer EMS organizations should provide early exposure to EMS for our children and adolescents. This helps provide a realistic and mentored approach to guiding adolescents and young adults to a career in EMS.

EMS as a Second Career – In addition to encouraging early involvement in EMS, there are advantages to encouraging mid and late careerists to consider EMS. There are many EMS agencies that hire EMT-Bs in their 40s and 50s who have already completed one career and are looking elsewhere. The length and quality of service will depend on physical capabilities and the ability to achieve certification. By encouraging second careers in EMS, access to seasoned workers, many with significant skills may enhance the system.

Volunteer EMS Providers

Traditionally, a volunteer EMS provider was one that provided their time and services for no compensation. It is unknown exactly how many volunteer EMS providers or volunteer organizations exist. Their definition of volunteer is not universal; many receive some type of compensation for their services.[72] Examples include: pay per call, tax incentives, tuition reimbursement and scholarships, health insurance, small pension plans and workman's compensation benefits. The degree of compensation and benefits depends on the area of the country one volunteers.

Recently, USA Today published an article that tried to pinpoint where volunteerism is most prevalent. It ranked the top 50 cities in the United States for volunteerism. They found that middle America had the highest rate of volunteerism. All but three of the top 20 were east of the Blue Ridge Mountains and only two were in the northeast (Bridgeport, CT and Pittsburgh, PA). A total of five 50 cities were from the northeast, with three being in Connecticut.[73] This lays the groundwork for identifying volunteer EMS staffing challenges in New Jersey.

Volunteer EMS Services in General – Most EMS in the United States is still provided by volunteers. There are no reliable data on the number of volunteer EMS providers, but many experts agree that the number is decreasing. Reasons for this vary but it appears related to several situations:

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[72] Margolis, G., & Studnek, J. How Many Volunteers are there Really*? Journal of Emergency Medical Services, 31*, 3, 17-21.
[73] Kornblum, J. (2007) Middle America Volunteers Most, Survey Finds. *USA Today*, Available [Online]. http://www.usatoday.com/news/nation/2007-07-08-volunteer-cities_N.htm

- A need for families to be dual-income.
- More people working for information and service employers, having to work longer workweeks and irregular shifts. For example, when many worked in manufacturing positions, they often worked more defined shifts. Volunteer services could count on members being available during off-shift cycles.
- The decline of family farms has lead to rural areas becoming suburban bedroom communities. Many new residents come from urban centers where full service public safety entities are more common. These new residents also average longer commute times, further reducing their ability to volunteer.
- The economics of suburban population shifts is changing the demographics of areas considered rural. Many who grew up in these areas cannot afford to live there, particularly during prime volunteer EMS years (ages 18-50).

The above issues are likely to affect all volunteer services, especially those requiring a significant level of physical aptitude.

Specific issues identified as contributing to the decrease of volunteer EMS include:

- The increased levels of training required to participate.
- Fear of costly litigation.
- Lack of membership options – members are expected to respond to emergencies, participate in prevention activities, squad maintenance and actively participate in fundraising. Administrative types of memberships are often reserved for senior members who can no longer physically perform emergency duties. These classifications are often reserved for members who have accumulated many years of seniority.
- In some cases, volunteers become disillusioned by the political issues that interfere with providing service. Some volunteer services are controlled by individual families or groups that include or exclude volunteers based on reasons other than service quality.
- Some volunteers feel “left out,” especially in places where career providers have taken over prominent roles.
- Poor management of organizations in regards to human resources and financial management.

Another aspect that is difficult to control is the increased run-volume that many squads are experiencing. As once rural communities become more suburban the demands for service increase. Squads who would average 1-2 calls every 24 hours may now be running an average of 4-5. Volunteers who rarely responded to emergencies during late night hours now do so on a regular basis, to the point of affecting readiness for work.

Training requirements require volunteers to make a significant commitment to volunteering. In 1976, the basic EMT training program was 81 hours. Today, the EMT-B program is 125 hours. Additionally, volunteers are required to attend continuing education to recertify every three years. In addition to continuing education, yearly refreshers covering infection control procedures and hazardous materials awareness are required.

A response to this has been an attempt to influence legislators to support alternate training programs requiring less hours. Although practical on the surface, this response serves only to further divide EMS and possibly denigrate the patient care standards that have been built over the last three decades. A better option would be to embrace EMT-B as the standard for basic care and work toward increasing accessibility for volunteers. This includes leadership and advocacy for distributive education methods, use of technology to reduce inaccessibility and incentives for volunteerism.

Recommendation 55: Volunteer EMS leadership should support EMT-B as the standard for BLS care and advocate for diverse methods of education that will increase accessibility to training.

Local squads report that changing communities present an even bigger challenge to recruitment and retention. Communities experiencing an influx of minorities do not see these groups participating in volunteer services. There are several possible reasons for this phenomenon that include:

- A perception of a hostile environment toward minorities. There is likely some reality to this but it is usually related to a lack of cultural competencies by organization leadership and members. Partnering with leaders of new communities and receiving training from experts in cultural competence may improve this situation.
- Some religions have strict Sabbath requirements that prohibit work on Friday nights and Saturdays. Arranging for training on alternate days and times often leads to retaining trained members, many who are eager to volunteer during secular holidays.
- Some religions have rules that restrict the shaving of facial hairs. This is less of a problem in EMS as SCBA use is usually not required for non-firefighting EMTs.

The recruitment and retention of women volunteers appears less problematic than with volunteer fire services. Representation of women in provider and leadership roles is increasing. Recently obtained information revealed that women constitute 38 percent of providers in services that allow for EMS-only roles versus 4 percent in volunteer fire departments.[74] Despite continued gains, volunteer services must assure that their organizations aggressively protect the rights of women with particular attention to intolerance for sexual harassment, hazing, restriction of opportunities and typecasting women into *traditional* roles.

New Jersey Volunteer EMS Providers – Volunteer squads provide about 60 percent of the EMS services to the citizens of New Jersey.[75] Although specific numbers are not available, our analysis of ALS transports indicates that the percentage of services provided by volunteer squads is dropping. Approximately 75 percent of all volunteer EMS providers belong to squads that are members of the New Jersey State First Aid Council (NJSFAC). Others belong to squads that are "unaffiliated" and operate with approval of the local municipality. While exact numbers are unavailable, most believe that overall squad membership is decreasing, primarily due to the reasons listed above.

What Steps Can Be Taken – Unfortunately, there is no *magic pill* when it comes to volunteer EMS recruiting and retention. In order to achieve any success, volunteer services will have to "let down their guard" and allow for new ideas and concepts. What appears as controlling may allow volunteer EMS to strengthen its ties to the communities they serve.

The NJSFAC has taken steps to encourage volunteerism by securing up to 15 specific benefits for its members. These range from a Length of Service Awards Program (LOSAP) which basically provides a modest, lifetime monthly benefit after 25 years of service and reaching a specific age, price breaks on insurance products, to tuition reimbursement and scholarships. Individual municipalities have also made unique contributions to their volunteers. The EMT training fund, mentioned in previous chapters, was created as a recruiting and retention inducement tool by paying for volunteer squad EMT training.

Certain squads, especially in northern New Jersey, have made a concerted effort to use the media to assist with recruitment. They have used the news media to spread the word of their challenges and have been frank about approaching crisis point. A comprehensive program for improving volunteer retention and recruitment may consist of the following steps:

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[74] USFA. (2007). *Retention and Recruitment for the Volunteer Emergency Services (FA-310).* Emmitsburg, MD: United States Fire Administration.

[75] The term "volunteer" squad refers to squads that do not charge for service and squads that do charge but are staffed by volunteers. When used in this chapter, "volunteer" refers to the provider and not necessarily to the squad.

STANDARDS AND LICENSING: Volunteer EMS system should support licensing, provider standards and the statewide information system. Taking the lead in these areas will allow volunteer EMS to develop a clear indication of their value to the citizens. Having information on response time, patient care and revenues (whether collected or not) will allow volunteer EMS organizations to quantify their worth. Simple threats of service demise and tax scares are no longer acceptable to citizens and politicians who have more sophisticated knowledge concerning health care.

CONSOLIDATION: Use the new information being gathered to help determine the size and strength of organizations. Volunteer leadership must step forward and encourage squad consolidations as an effort to enhance the volunteers' strength within their community. Logic dictates that if a similar area can be covered by one organization from one location with one set of administrators and line officers and a pool of experienced people, then three or four separate squads are unnecessary. EMS is being challenged to show how they affect patient outcome medically and financially. As this information becomes available, volunteer services will be positioned to expect municipal support.

PUBLIC RELATIONS: The NJDEMS should invest in a statewide campaign to create media programs to encourage volunteerism. This should be a professional approach featuring name recognized actors and New Jersey volunteers shown in various capacities (I.e. providing care, fund-raising, illness and injury prevention, and administrative). The theme should emphasize that "everybody can do something."

TRAINING: Increase the accessibility to EMT-B training using technology such as video streaming and distributive learning for appropriate segments. This may reduce travel time and expense.

COMBINATION SERVICES: Offer less resistance to the need for combination career/volunteer services. Career augmentation, especially during daytimes, may allow volunteers to focus their time and effort into 100 percent availability during the times which they are responsible for.

LEADERSHIP: Good leadership goes a long way toward keeping members. State and local municipalities should invest in EMS leadership training for local squad officers. Having good human resources skills helps to create a positive environment, free from harassment and unfair practices.

CITIZEN CORP: Volunteer EMS should embrace the FEMA Citizens Corp Program. This program uses members of the community to be of help during natural and manmade disasters by assisting first responders in providing services not requiring extensive training. Some EMS

organizations have looked at this as a burden and another thing they are being asked to do. Instead, they should consider this an opportunity to provide potential volunteers with *a taste* of the environment. Potential volunteers who may feel uncomfortable or intimidated by full EMS duties may find that they have underestimated their abilities and desire to take on a greater role.

BENEFITS: The NJSFAC should continue to offer their members a benefit package that promotes volunteerism. An additional possibility is to seek funding for daycare at volunteer squads or a daycare tax-exemption for parents who want to volunteer but must secure daycare.

Any decisions should consider the realities of the area and situation. It is futile to continue investing time and money to save volunteer services in areas where it is unlikely to happen. The next few years will be key to the future of volunteer EMS in New Jersey. Critical decisions that favor good patient care and wise uses of resources may help keep the volunteer system strong. Leaning towards territorialism and resisting change will likely continue the current spiral toward the demise of volunteer services.

APPENDIX A: LIST OF RECOMMENDATIONS

Recommendation	Page
1. NJOEMS and the NJ EMS Council should study and identify alternative access and treatment pathways for EMS providers to follow. This includes, but is not limited to, treat and release and transportation to alternative treatment facilities.	50
2. The NJOEMS should become a clearinghouse for EMS Research. They should work in conjunction with state medical schools emergency medicine residency programs and EMS management educational programs to facilitate prehospital research.	50
3. The NJOEMS and the MICU Advisory Committee should work with the NJ Attorney General's office to make legal and administrative changes that will facilitate EMS research.	51
4. Legislation should be passed that requires local municipalities to provide EMS (or cause to be provided). This obligation should be similar to the obligation to provide law enforcement and fire services.	50
5. All EMS provider agencies should be licensed by NJOEMS.	50
6. There should be a comprehensive overhaul of the current state EMS legislation and regulations.	52
7. The OEMS and NJSFAC should work to devise a plan that will encourage consolidation of squads in areas where geographic, human resources, or economies of scale issues make consolidation logical. There should be financial incentives to the NJSFAC and local squads for agreeing to consolidation.	53
8. Enact the suggestions listed in sections A, B, and C concerning system fiscal assessment. This includes using the county governments as a conduit for EMS service fee collection and disbursement and redirecting 50 percent of the funds from the automobile registration program from the NJSP air medical program to NJOEMS.	54
9. NJOEMS should begin a dialogue with CMS to facilitate the changes to the Medicare collection process. Organizations including the NJSFAC, NJMTA, and similar groups should assist with the process.	55
10. Upgrade the qualifications for EMS Medical Directors, including the requirement for documented training and EMS experience.	56
11. New Jersey should hire a paid, full-time state EMS medical director.	57
12. There should be EMS medical direction at all levels of care. Qualifications for ALS and BLS medical direction should be established by NJOEMS and oversight provided by a state EMS medical director.	57
13. If NJOEMS adopts a regional EMS model, a regional medical director should be appointed for each region.	57
14. NJOEMS should adopt the National EMS Scope of Practice Model and create legislation to reflect this change.	58
15. NJOEMS should attempt to formally determine how many additional EMT classes and EMT Instructors will be needed to reach this goal.	59
16. If a regional plan is adopted, move oversight of continuing education to the regional level. Also consider adopting policies that allow regional/county academies the authority to approve continuing education, with the NJOEMS providing quality management.	59
17. The NJOEMS should create a state EMS public relations plan.	59
18. Aggressively move toward compliance with the consolidated countywide 911 centers. This includes the consolidation of both primary access point and primary dispatch point agencies.	61
19. New Jersey should require emergency medical dispatch programs to adopt one of the nationally recognized Emergency Medical Dispatch programs within five years.	62

Recommendation	Page
20. The NJOEMS in conjunction with the NJ EMS Council should determine response time standards for EMS that apply to all agencies. To facilitate this, dispatch centers should be required to collect and report EMS response time intervals.	62
21. Within five years, all EMS response units should be equipped with AVL.	63
22. Transfer responsibility and oversight of EMD licensure/certification to NJOEMS. EMD should be codified as a license/certification similar to EMT-B.	63
23. Increase emphasis on the quality management aspects of MPD. Consolidated PSDP centers should make this recommendation easier to implement.	64
24. All BLS ambulances, regardless of delivery platform, must be staffed with at least two NJ certified/licensed EMT-Bs. First responder or other certification programs should not take the place of a state approved EMT-B program.	65
25. Add the administration of oxygen-nebulized or metered-dose inhaled beta agonist agents to the EMT-B scope of practice.	66
26. NJOEMS should create a statewide EMS database using the NEMSIS minimum data set.	67
27. NJOEMS should create a statewide PCR that can be used by all ALS and BLS units. Use of this report should be required for all EMS units. Reporting of aggregate data should not be accepted as a substitute for the statewide PCR.	67
28. All EMS patient care encounters must be documented on an official patient care report. A copy of all patient care reports must be left at the receiving hospital. Emergency departments must place a copy of the PCR or download the PCR data into the patient's chart. Under no circumstances should EMS PCRs be discarded.	67
29. EMS services must adopt an approved statewide PCR to receive any state funding.	67
30. Primary access points and primary dispatch points centers must employ appropriate hardware and software necessary to provide accurate data and populate data fields on the PCR.	67
31. Change EMS legislation and regulations to move operational and technical issues outside of the legislative and regulatory process. Operational and technical issues should be the responsibility of the NJOEMS and the state EMS medical director.	72
32. Move all EMS issues out of the Highway Safety Act and into EMS Legislation. Accept the above suggestions for the new legislation.	74
33. The state EMS protocol should state the instances where online physician direction is required. There is no evidence that supports requiring physician contact for every patient encounter. Using nurses or physician assistants for ALS online direction is not recommended.	80
34. Restructure the state EMS system as described above. Immediately appoint the senior staff and have them begin a one to two year transition process for the NJDEMS.	87
35. Implement a regional EMS system within the NJDEMS, with one region for northern, central, and southern New Jersey.	90
36. Encourage the development of county-level EMS oversight.	90
37. Accept the above six principles as a plan for upgrading the state EMS information system.	91
38. Select often used helicopter landing areas and using the above variables, pre-determine the closest units. Upgrade REMCS and helicopter units with the appropriate tracking devices that can determine the closest units.	101
39. If the NJOEMS wishes to enact a protocol for commercial helicopter dispatch, it should be precise and easy to follow. Documentation should be kept to measure key time intervals and patient outcomes.	102
40. EMS helicopter units which are determined to have "self-dispatched" to emergencies should be subject to suspension. Repeated violations should be grounds for license	103

Recommendation	Page
revocation.	
41. Adopt the above reallocation of EMS JEMSTAR funding to positively affect all aspects of the EMS System. This should be reevaluated in two years to determine if reallocation is necessary.	105
42. Licensed commercial air medical services should be allowed to function as a back-up to the JEMSTAR system. JEMSTAR should continue to revise the dispatch and response protocols to refine the current process. Commercial units are encouraged to carefully consider the profitability of commercial air medical services.	105
43. Quality management of medical priority dispatch must be established for ALS services to be efficient.	110
44. Eliminate the use of ALS projects as de facto cover for BLS services. Consider using commercial services for back-up BLS transportation or fire services for BLS first response.	110
45. Medical directors should determine which patients ALS units can transfer care to after assessment or treatment.	110
46. Allow ALS projects to provide patient transportation.	111
47. Modify legislation and regulation to allow ALS transport units to be staffed by one paramedic and one EMT and non-transport units to be staffed with one paramedic. The ALS project medical director can mandate minimum staffing for the specific unit.	114
48. EMS organizations should be allowed to provide ALS if they meet the project guidelines set by the NJOEMS.	114
49. New Jersey should not pursue adding EMT-Intermediate as an EMS provider level.	116
50. Allow non-firefighter paramedics and EMT-Bs into the Fire and Police Pension System. Alternatively, create a special section in PERS for paramedics and EMT-Bs.	122
51. Encourage EMS and other healthcare professionals to cross-train, but provide a career path for those wishing to make EMS a career. Education programs build bridges instead of walls for those wishing to further their education.	123
52. New Jersey community colleges and four-year colleges who provide EMS management programs should consider adopting the FESHE curriculum. Training programs should target the four EMS management levels identified above.	123
53. EMS managers should take advantage of EMS training programs sponsored by the National Fire Academy, the American Ambulance Association and other private organization.	123
54. Schools, social organizations and volunteer EMS organizations should provide early exposure to EMS for our children and adolescents. This helps provide a realistic and mentored approach to guiding adolescents and young adults to a career in EMS.	124
55. Volunteer EMS leadership should support EMT-B as the standard for BLS care and advocate for diverse methods of education that will increase accessibility to training.	126

APPENDIX B: FOCUS GROUP-STATE ASSESSMENT

Aeromedical EMS		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1	3	1	2	2	2	3	3	2	2	3	3	3	3	3
	2	2	1	2	2	2	3	2	2	2	3	3	2	2	2
	3	3	1	1	2	2	2	3	2	2	4	3	3	2	2
	4	3	3	3		4		3	3	3		3		3	
	5	3	2	3	3	4	3	3	2	4	3	3	3	3	3
	6	1	1	1	2	1	2	1	2	2	1	3	2	1	1
	7	2	1	2	2	2	2	2	2	1	2	2	2	2	1
	8	2	3	2	1	1	2	2	1	1	3	2	3	1	1
	9	3	2	2	1	2	1	3	2	3	4	3	4	2	2
	10	2	2	1	1	2	3	3	2	1	3	3	2	1	1
Total		24	17	19	16	22	21	25	20	21	26	28	24	20	16
Avg		2.40	1.70	1.90	1.78	2.20	2.33	2.50	2.00	2.10	2.89	2.80	2.67	2.00	1.78
Mean	SD														
2.22	0.39														

NJEMS Report Card - Aeromedical	
Integration into Health Services	MARGINAL
EMS Research	MARGINAL
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	EMERGING
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	EMERGING
Prevention	MARGINAL
Public Access	EMERGING
Communications Systems	EMERGING
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	MARGINAL
Overall	**MARGINAL**

EMS Critical Care

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	1	3	2	2	3	1	1	1	1	2	3	2	2
2	2	2	2	2	3	3	3	2	3	3	3	3	2	2
3	3	1	2	1	1	4	2	1	2	3	4	4	2	2
4	3	1	2	1	3	3	2	1	2	3	3	4	2	2
5	3	2	3	2	3	1	2	1	3	3	2	4	1	1
6	3	1	2	2	3	2	3	1	2	3	3	4	2	2
7	3	1	2	2	2	2	2	1	2	2	2	3	2	1
8	3	1	2	2	2	2	2	2	2	3	3	4	3	2
9	2	1	1	1	2	2	2	1	2	2	1	3	2	2
Total	23	11	19	15	21	22	19	11	19	23	23	32	18	16
AVG	2.56	1.22	2.11	1.67	2.33	2.44	2.11	1.22	2.11	2.56	2.56	3.56	2.00	1.78

Mean	SD
2.16	0.60

NJEMS Report Card - Critical Care

Integration into Health Services	EMERGING
EMS Research	UNSATISFACTORY
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	UNSATISFACTORY
Prevention	MARGINAL
Public Access	EMERGING
Communications Systems	EMERGING
Clinical Care	VERY GOOD
Information Systems	MARGINAL
Evaluation	MARGINAL
Overall	**MARGINAL**

EMD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	1	1	1	1	2	2	2	2	3	3	3	2	2
2	1	1	2	1	2	2	2	4	3	3	2	2	3	2
3	1	1	2	1	1	1	1	2	2	4	2	2	1	1
4	1	1	2	2	1	2	3	3	2	5	4	2	3	2
5	1	1	2	1	1	2	2	2	1	3	3	2	2	2
6	1	1	2	2	2	2	2	2	2	4	3	2	2	1
Total	7	6	11	8	8	11	12	15	12	22	17	13	13	10
AVG	1.17	1.00	1.83	1.33	1.33	1.83	2.00	2.50	2.00	3.67	2.83	2.17	2.17	1.67

Mean	SD
1.96	0.71

NJEMS Report Card - EMD	
Integration into Health Services	UNSATISFACTORY
EMS Research	MARGINAL
Legislation and Regulation	UNSATISFACTORY
System Finance	UNSATISFACTORY
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	EMERGING
Prevention	MARGINAL
Public Access	VERY GOOD
Communications Systems	EMERGING
Clinical Care	MARGINAL
Information Systems	MARGINAL
Evaluation	MARGINAL
Overall	**MARGINAL**

EMS Administrators

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	2	4	3	3	3	4	1	1	4	4	3	3	1
2	1	1		1	1	2	2	1	1	1	2	2	1	1
3	1	2	4	3	3	3	5	2	3	5	4	2	3	1
4	2	1	2	1	2	4	2	1	1	2	3	3	3	1
5	2	1	2	2	2	2	1	1	1	2	3	2	2	1
6	2	1	3	3	3	3	3	1	2	2	3	3	2	1
7	2	2	2	2	2	3	3	2	2	3	2	3	2	2
Total	12	10	17	15	16	20	20	9	11	19	21	18	16	8
AVG	1.71	1.43	2.83	2.14	2.29	2.86	2.86	1.29	1.57	2.71	3.00	2.57	2.29	1.14

Mean	SD
2.19	0.65

NJ EMS Administrator Report Card

Integration into Health Services	MARGINAL
EMS Research	UNSATISFACTORY
Legislation and Regulation	EMERGING
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	EMERGING
Education Systems	EMERGING
Public Education	UNSTATISFACTORY
Prevention	MARGINAL
Public Access	EMERGING
Communications Systems	EMERGING
Clinical Care	MARGINAL
Information Systems	MARGINAL
Evaluation	UNSATISFACTORY
Overall	**MARGINAL**

County EMS Coordinators

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	1	1	1	1	2	1	2	1	1	2	1	2	1
2	1	1	1	1	1	1	2	1	1	2	2	2	1	1
3	2	1	1	1	1	1	2	1	1	1	2	1	1	1
4	2	2	2	2	3	3	2	1	1	3	2	3	2	2
5	1	1	1	1	2	2	1	2	2	2	2	2	1	1
6	2	2	1	1	2	2	3	2	1	1	3	4	1	1
7	2	1	1	1	2	3	2	1	1	2	1	4	1	1
8	1	1	1	2	2	2	2	1	1	2	2	2	1	1
9	2	2	1	2	2	3	3	2	1	3	3	3	2	1
TOTAL	15	12	10	12	16	19	18	13	10	17	19	22	12	10
AVG	1.67	1.33	1.11	1.33	1.78	2.11	2.00	1.44	1.11	1.89	2.11	2.44	1.33	1.11

Mean	SD
1.63	0.43

EMS COORDINATORS

NJEMS Report Card - EMS COORDINATORS

Integration into Health Services	MARGINAL
EMS Research	UNSATISFACTORY
Legislation and Regulation	UNSATISFACTORY
System Finance	UNSATISFACTORY
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	UNSATISFACTORY
Prevention	UNSATISFACTORY
Public Access	MARGINAL
Communications Systems	MARGINAL
Clinical Care	MARGINAL
Information Systems	UNSATISFACTORY
Evaluation	UNSATISFACTORY
Overall	**MARGINAL**

EMS Educators

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	2	2	1	3	1	2	2	2	2	1	3	1	2
2	2	1	2	1	2	2	2	1	1	3	2	2	1	2
3	1	2	2	1	2	2	2	2	1	2	2	3	2	2
4	1	1	1	1	1	3	3	2	2	2	2	3	1	1
5	1	1	1	1	2	3	3	2	2	1	3	3	1	1
6	3	3	3	3	3	2	4	3	3	3	3	3	3	2
7	1	1	1	1	2	1	2	1	1	3	3	3	2	2
8	1	1	1	1	2	2	2	1	2	2	2	2	1	1
9	1	2	1	1	2	1	2	1	2	3	3	4	2	1
10	1	1	1	2	2	2	2	2	1	2	4	3	2	3
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	2	2	2	2	2	1	1	3	2	3	2	1
Total	16	19	21	20	29	28	34	27	28	37	39	45	32	33
AVG	1.23	1.46	1.62	1.54	2.23	2.15	2.62	2.08	2.15	2.85	3.00	3.46	2.46	2.54

Mean	SD
2.24	0.64

NJEMS Report Card - EMS Educators	
Integration into Health Services	UNSATISFACTORY
EMS Research	UNSATISFACTORY
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education Systems	EMERGING
Public Education	MARGINAL
Prevention	MARGINAL
Public Access	EMERGING
Communications Systems	EMERGING
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	EMERGING
Overall	**MARGINAL**

EMS Physicians

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	1	2	1	2	4	3	1	1	3	3	3	2	2
2	2	1	1	1	1	2	3	1	1	3	3	3	2	2
3	1	1	1	1	2	3	3	2	3	3	2	3	3	3
4	1	1	1	2	2	3	3	2	2	2	1	3	2	2
5	1	1	1	1	2	3	3	2	1	2	2	3	2	2
6	2	1	2	1	1	3	3	1	1	2	2	3	3	2
7			2	2	2	3	3	1	1	2	2	1	3	1
8			2	2	2	3	3	3	3	2	2	2	3	2
9	1	1	1	1	1	3	2	1	2	1	2	2	1	1
Total	10	7	13	12	15	27	26	14	15	20	19	23	21	17
AVG	1.43	1.00	1.44	1.33	1.67	3.00	2.89	1.56	1.67	2.22	2.11	2.56	2.33	1.89

Mean	SD
1.94	0.60

NJEMS Report Card - EMS Physicians	
Integration into Health Services	UNSATISFACTORY
EMS Research	UNSATISFACTORY
Legislation and Regulation	UNSATISFACTORY
System Finance	UNSATISFACTORY
Human Resources	MARGINAL
Medical Direction	EMERGING
Education Systems	EMERGING
Public Education	MARGINAL
Prevention	MARGINAL
Public Access	MARGINAL
Communications Systems	MARGINAL
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	MARGINAL
Overall	**MARGINAL**

EMTs

3	4	5	6	7	8	9	10	11	12	13	14
1	2	2	2	2	1	2	3	3	2	2	1
2	2	2	2	2	2	2	2	2	2	2	2
3	3	2	1	3	3	2		4	2	2	2
1	3	2	2	3	1	1	1	3	3	1	1
1	1	1	2	2	1	1	1	2	2	1	1
1	1	1	2	3	1	2	2	3	1	2	2
1	1	1	3	2	1	1	4	2	1	2	1
2	1	2	1	2	1	2	4	3	2	3	2
2	1	1	1	2	2	1	3	3	3	2	2
1	1	1	2	1	1	2	3	2	1	2	1
2	1	3	3	2	3	3	3	4	4	3	1
17	17	18	21	24	17	19	26	31	23	22	16
1.55	1.55	1.64	1.91	2.18	1.55	1.73	2.60	2.82	2.09	2.00	1.45

Mean	SD
1.87	0.43

NJEMS Report Card - EMT	
Integration into Health Services	MARGINAL
EMS Research	UNSATISFACTORY
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	MARGINAL
Prevention	MARGINAL
Public Access	EMERGING
Communications Systems	EMERGING
Clinical Care	MARGINAL
Information Systems	MARGINAL
Evaluation	UNSATISFACTORY
Overall	**MARGINAL**

FIRE CHIEFS

3	4	5	6	7	8	9	10	11	12	13	14
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	1	1	1	1	2	2	1	2	1
2	1	2	1	2	1	1	2	1	1	2	1
1	1	1	1	2	2	2	2	1	2	1	1
2	2	1	1	2	1	1	2	2	2	1	1
1	1	2	3	2	1	1	1	3	2	2	1
1	2	2	1	2	1	1	2	2	2	1	1
12	12	13	11	14	10	10	14	14	13	12	9
1.50	1.50	1.63	1.38	1.75	1.25	1.25	1.75	1.75	1.63	1.50	1.13

Mean	SD
1.46	0.23

NJEMS Report Card - Fire Chiefs

Integration into Health Services	UNSATISFACTORY
EMS Research	UNSATISFACTORY
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	UNSATISFACTORY
Education Systems	MARGINAL
Public Education	UNSATISFACTORY
Prevention	UNSATISFACTORY
Public Access	MARGINAL
Communications Systems	MARGINAL
Clinical Care	MARGINAL
Information Systems	MARGINAL
Evaluation	UNSATISFACTORY
Overall	**UNSATISFACTORY**

NJAP														
		NJAP												
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	2	1	1	1	1	2	3	2	3	2	2	4	3	1
2	1	2	2	1	2	1	2	2	2	3	3	5	3	1
3	3	1	2	1	2	3	3	2	2	1	1	2	2	1
4	2	1	3	2	3	4	2	4	1	4	3	3	3	2
5	2	2	1	1	2	2	3	3	3	3	3	2	3	2
6	2	1	2	1	1	3	2	1	1	3	2	4	2	2
7	2	1	2	1	2	4	3	2	1	3	2	4	1	2
8	1	2	1	1	2	3	3	2	2	1	3	3	3	1
9	1	2	1	1	1	1	1	1	1	1	1	3	1	1
Total	16	13	15	10	16	23	22	19	16	21	20	30	21	13
AVG	1.78	1.44	1.67	1.11	1.78	2.56	2.44	2.11	1.78	2.33	2.22	3.33	2.33	1.44

Mean	SD
2.02	0.57

NJEMS Report Card - NJAP	
Integration into Health Services	UNSATISFACTORY
EMS Research	MARGINAL
Legislation and Regulation	UNSATISFACTORY
System Finance	MARGINAL
Human Resources	EMERGING
Medical Direction	MARGINAL
Education Systems	MARGINAL
Public Education	MARGINAL
Prevention	MARGINAL
Public Access	MARGINAL
Communications Systems	MARGINAL
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	UNSATISFACTORY
Overall	**MARGINAL**

NJSFAC

Person	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	2	2	3	3	3	4	2	1	3	4	3	3	4	2
2	1	2	2	1	3	3	1	2	3	4	3	1	2	1
3	1	1	2	1	2	1	1	1	3	4	1	2	3	1
4	1	1	2	2	3	3	3	2	3	4	2	3	2	1
5	1	2	2		3	2	3	1	3	4	3	3	3	3
6	1	1	1	2	2	2	1	2	4	3	3	3	4	1
7	2	2	1	1	1	2	2	1	2	4	1	3	4	2
8	1	2	1	2	2	2	1	2	3	3	3	2	3	1
9	1	2	2	3	3	4	2	2	3	3	2	1	3	2
10	2	2	3	1	2	2	3	2	3	4	2	1	3	3
Total	14	19	22	20	29	31	26	24	39	47	34	34	44	31
AVG	1.30	1.70	1.90	1.78	2.40	2.50	1.90	1.60	3.00	3.70	2.30	2.20	3.10	1.70

Mean	SD
2.22	0.67

Scoring Grid

1.0 - 1.49 = Unsatisfactory
1.5 - 2.49 = Marginal
2.5 - 3.49 = Emerging
3.5 - 4.49 = Very Good
4.5 - 5.0 = Excellent

NJEMS Report Card - NJFAC	
Integration into Health Services	UNSATISFACTORY
EMS Research	MARGINAL
Legislation and Regulation	MARGINAL
System Finance	MARGINAL
Human Resources	MARGINAL
Medical Direction	EMERGING
Education Systems	MARGINAL
Public Education	MARGINAL
Prevention	EMERGING
Public Access	VERY GOOD
Communications Systems	MARGINAL
Clinical Care	MARGINAL
Information Systems	EMERGING
Evaluation	MARGINAL
Overall	**MARGINAL**

NJMTA

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	2	1	1	2	2	1	1	1	2	3	2	3	1	1
2	2	1	2	1	2	3	2	2	1	3	3	4	2	2
3	2	1	2	1	2	3	2	1	1	4	2	3	3	2
4	2	1	2	1	2	3	2	1	1	2	3	2	3	2
5	2	1	2	1	2	3	2	3	2	4	2	2	1	
6	3	1	3	1	2	4	2	2	1	4	2	5	1	2
7	2	1	2	2	2	3	2	1	2	4	2	5	1	2
8	1	1	1	1	2	2	2	1	1	2	1	2	1	
9	1	1	2	1	1	2	2	1	1	3	1	3	1	1
10	1	1	2	1	2	3	2	1	2	4	3	4	1	1
Total	18	10	19	12	19	27	19	14	14	33	21	33	15	13
AVG	1.80	1.00	1.90	1.20	1.90	2.70	1.90	1.40	1.40	3.30	2.10	3.30	1.50	1.63

Mean	SD
1.93	0.71

NJEMS Report Card - NJMTA

Integration into Health Services	MARGINAL
EMS Research	UNSATISFACTORY
Legislation and Regulation	MARGINAL
System Finance	UNSATISFACTORY
Human Resources	MARGINAL
Medical Direction	EMERGING
Education Systems	MARGINAL
Public Education	UNSATISFACTORY
Prevention	UNSATISFACTORY
Public Access	EMERGING
Communications Systems	MARGINAL
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	MARGINAL
Overall	MARGINAL

PARAMEDICS

Person	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1	1	2	2	1	1	2	1	1	2	1	1	1	1
2	1	1	1	1	1	1	1		1		1	2	1	1
3	2	1	1	2	1	2	2	2	1	2	2	4	3	2
4	2	1	2	1	1	3	2	2	3	5	3	4	1	2
5	1	1	1	1	2	3	2	1	1	2	2	3	1	1
6	3	1	2	2	2	2	2	1	1	3	2	3	2	3
7	2	1	2	1	2	2	3	1	1	2	1	3	2	2
8	1	1	1	1	2	3	1	1	1	3	2	4	3	1
9	2	1	1	1	2	2	2	1	2	1	1	2	2	1
10	2	1	1	1	1	2	3	1	1		1	3	1	1
11	3	1	1	1	1	3	3	2	2	2	1	3	2	1
12	3	1	2	1	2	3	2	1	1	4	2	4	1	1
Total	24	14	20	19	23	33	32	22	25	36	30	48	33	31
AVG	1.85	1.08	1.54	1.46	1.77	2.54	2.46	1.83	1.92	3.27	2.31	3.69	2.54	2.38

Mean	SD
2.19	0.71

Report Card for Paramedics

Integration into the EMS System	MARGINAL
EMS Research	UNSATISFACTORY
Legislation and Regulation	UNSATISFACTORY
System Finance	UNSATISFACTORY
Human Resources	MARGINAL
Medical Direction	MARGINAL
Education System	MARGINAL
Public Education	UNSATISFACTORY
Prevention	UNSATISFACTORY
Public Access	EMERGING
Communication System	MARGINAL
Clinical Care	EMERGING
Information Systems	MARGINAL
Evaluation	UNSATISFACTORY

APPENDIX C: FOCUS GROUP PRIORITIES

Integration into Healthcare System

Scope of practive expansion	2	5	3		4		3	3	4	4	2			9	30
Municipal Recogniton 911, EM, Public Safety	4						5				5	4		4	18
Better hospital interface					3			2	2				4	4	11
Recognize EMS as a Public Safety Element	5						4						5	3	14
Oversight of system integration				4		4			3					3	11
Alternative pathway		1	5									3		3	9
Physician EMS education			2			5				2				3	9
Single source social service provider					5							5		2	10
Separate State EMS Office				5				5						2	10
One state standard				4				4						2	8
Regionalization						2			5					2	7
Open ALS to multiple entities	2										4			2	6
Integrate w/other services					2	4								2	6
Patient focused care			4										2	2	6
PMs can work in hospitals					1					3				2	4
Assess overall health of population								1					3	2	4
ALS to continue hospital based										5				1	5
Raise BLS Standards		4												1	4
Revamp Certificate of Need	3													1	3
Multi-disciplinary provider education											3			1	3
Link healthcare careers		3												1	3
Direct link to substance abuse centers												2		1	2
State EMS Leadership standard						2								1	2
County EMS Office				2										1	2
Integration of dispatch		2												1	2
Long term care provider education												1		1	1
Expand PM interfacility capabilities										1				1	1
Common Database			1											1	1
ID Funding Sources													1	1	1
Reconsider ALS Council														0	0

EMS Research

OEMS Research Center	3	4	1	3			3	3	5		4	3	5	10	34
State standard EMS dataset incl data collection system	5		2	5	3	5	2		4	3	5			9	34
Identify funding resources		5	3	2		1	5	4						6	20
Evidence based practice and protocol			4	4						5	3		4	5	20
Regulations facilitating EMS Research	2					4	4			2				4	12
Outcomes given to providers	1					2			2		2			4	7
Conduct operations research										1	1	2	2	4	6
Mandate MAC review of research incl recommendations (IRB)	4		5					2						3	11
Lift legislative barriers to EMS research					5			5						2	10
Research component in EMS curriculum		3						1						2	4
Revisit research regulations					2		1							2	3
Expedite research to facilitate technology upgrade												5		1	5
Create a benefit for participation in research					4									1	4
State Medical Director oversight										4				1	4
Alternative education models												4		1	4
Regional QA at all levels						3								1	3
Standardized software									3					1	3
Identify qualified research partners													3	1	3
Participate in National research meetings		2												1	2
BLS Research					1									1	1
Recruitment and retention												1		1	1

Legislation and Regulation														
Require local gvmt to provide EMS		3	3	4	4	3	4	4	5		5		9	44
Enabling legislation-Activites to executive branch	5			2			5	2	1	2	2	2	8	29
Level playing field-one standard			5	5		5	1		4	4			6	30
Medical protocols out of regulations					5	2	2			5	3	4	6	27
All providers regulated		1			4			5			4	5	5	24
OEMS as a full division	3			3				1					3	10
Require negotiated rulemaking		5								3			2	10
Uniform Svc Delivery Model	4						3						2	9
Legislation to support EMS regionalization			1									3	2	6
County-based EMS legislation			2			1							2	5
Unaffiliated squads be legislated to regulate		4											1	5
Medicaid and no-fault must pay fair share			4										1	5
State EMS Medical Director						4							1	5
Evaluate legislation for crew changes								3					1	4
Regional Dispatch points									3				1	4
Patient focused legislation	2												1	3
Avoid overregulation		2											1	3
DOH impact statement for pending legislation					2								1	3
OETS given enforcement power									2				1	3
Consumer involvement-public forums				1									1	2
OEMS - legislature liaison					1								1	2
Timliness										1			1	2
Appropriate destination standards											1		1	2

System Financing															
Identify dedicated sources of funding	5	2	4		3	5			5	5			2	8	31
All able to use volunteer training fund				2	2	3	4		4			5	4	7	24
Increase funding for ground EMS (reduce competition)		5			5	4	3	5				4		6	26
Economies of scale for EMS	3		5	4	4								5	5	21
Funding based on readiness							5	4				3		3	12
State reimbursement for unreimbursed services	2	4									5			3	11
Recover unclaimed money			3							3			3	3	9
State regulation of division of $ to providers										4	3			2	7
OEMS advocate for 3rd party reimbursement services							1		3					2	4
911 services used for 911 services				5										1	5
Regional-based billing/remuneration systems	4													1	4
Direct pay from payor to providers											4			1	4
Communications/technical funding		3												1	3
Proper system utilization				3										1	3
ALS units allowed to transport								3						1	3
Incentive grants						2								1	2
Allow for MICU subsidies							2							1	2
Remove municipal funding caps									2					1	2
Licensed agencies who bill must notify										2				1	2
Include commerical services in homeland security											2			1	2
Financial review				1										1	1
Bundled billing					1									1	1
Local EMS to access state contracts						1								1	1
OEMS advocacy for funding									1					1	1
Reimbursement for alternative services													1	1	1

Human Resources

Access to pensions/career ladder	3		3	3	2		5	5	5	5	4	5	5	11	45
Pay and Benefit parity w/ police and fire		4	2		5	5	4		3	4	5	3	4	10	39
Recruitment and Retention Initiatives		5			4		1	4			3			5	17
Establish a paramedic training fund				4		4							2	3	10
Performance-based licensing									2	3			1	3	6
Create an EMS Academy with the training fund $			4				3							2	7
LODD benefits to EMS providers				5							2			2	7
Easier access to EMT, PM, Recert trng	2											4		2	6
Study why we are losing EMS providers		2			4									2	6
National Registry as reciprocity standard				2				3						2	5
Expanded role/scope							2						3	2	5
Facilitate cultural change	1											1		2	2
Municipality assumes EMS as public safety	5													1	5
Professionalize the EMS career			5											1	5
Single standard for EMT and PM	4													1	4
Right-size resources									4					1	4
OSHA compliance at municipal level		3												1	3
Standardized, valid entry-level testing										2				1	2
State employee assistance program for EMS personnel												2		1	2
Leadership training for officers		1												1	1
LOSAP					1									1	1
Safety and shift schedule									1					1	1

Medical Direction

Standards for medical direction/medical command	4	1	2	4		3	4	3	4	1	5	3	3	12	37
Appoint a state EMS Medical Director	2	2	3		3	4	2	5	3	5		5	5	11	39
Active medical direction at all levels		4		5	2		5		5	3			4	7	28
Protocol driven care-on line is exception only	5		5	2	5		3	1		4				7	25
Regional EMS medical direction						1		2		2			2	4	7
Remove protocols from regulations		5			4						1			3	10
Require BLS Medical Direction	3					2		4						3	9
Centralized on-line medical direction			4								3			2	7
State EMS agency director						5			2					2	7
Medical command must provide for all who access											4			1	4
BLS medical direction to continue as is												4		1	4
MAC should have jurisdiction over ALS and BLS		3												1	3
EMD Medical Direction				3										1	3
Local options for medical direction											2			1	2
Require QI program	1													1	1

Public Education

State public relations PR plan	5	3	5		5	5	2	5		4	5			9	39
Identify financial resources		2					3		4		2	5	2	6	18
Educate EMS providers about Pub Ed		5					5			5	4	3		5	22
Identify and use existing programs		4					1	4			3		5	5	17
EMS in school curriculum					4	3	4			3				4	14
Clearly distinguish provider level patches		1	4						3				1	4	9
State driving test to include interactions w/emerg vehicles				5					2					2	7
Funding for EMS week									5					1	5
Continue trauma/EMS-C activities				4										1	4
Provide 911 week funding						4								1	4
Coordination of education with public health groups												4		1	4
State initiative to increase EMS as a career choice													4	1	4
Performance metrics			3											1	3
Share best practices				3										1	3
Region specific EMS pub ed					3									1	3
Political intervention/support for pub ed								3						1	3
House identification material													3	1	3
Wellness education			2											1	2
Media partnership					2									1	2

Prevention															
State funding for prevention programs	5					5	4		4	4	4	5	3	8	34
EMS Prevention as a state initiative	4						5	5	5				5	5	24
Data collection dealing with prevention	3			3		4					3			4	13
State pilot prevention programs		5				3							4	3	12
OEMS as a clearinghouse for prevention activities			5					4					2	3	11
Educate EMS about prevention	1	3			3									3	7
Identify existing program					1					2		3		3	6
Expanded scope of practice to include prevention				5			2							2	7
State-level community health risk training			3					3						2	6
Injury prevention activities				2								4		2	6
Take advantage of teaching moment			2		2									2	4
Driving standards					5									1	5
Criminal check of provider applicants										5				1	5
Wellness											5			1	5
Zoning input		4												1	4
Tie prevention grants to performance			4											1	4
Employee safety program				4										1	4
Partner with other agencies					4									1	4
OEMS PR Rep	3													1	3
Mandatory reporting of EMS injuries							3							1	3
Fund prevention technology									3					1	3
Early referral to prevent system abuse										3				1	3
Identify non-emergency pathways						2								1	2
Establish prevention goals												2		1	2
Non-emergency number access				1										1	1
Back injury prevention							1							1	1
Expand volunteer membership classificationss												1		1	1

Public Access

PSAP and dispatch regionalization		5	5			2	4	4				5		6	25
Enforce EMD compliance	1			5	4	4		3		4				6	21
Develop standard response times (out the door) for ALS/BLS	3					5				5				3	13
Fund Phase 2 and other current technical programs	5						1		5					3	11
All EMS units with AVL				4			3			3				3	10
Identify alternate entry points			4						3				2	3	9
Dispatch of closest unit											5		4	2	9
VOIP to meet landline standards				3									3	2	6
Resources for PSAP						3				2				2	5
Clean up public access					5									1	5
Establish a non-emergenc number							5							1	5
Universal access for all								5						1	5
Increase hospital access												5		1	5
Off-load paramedics												5		1	5
Statewide divert policy												5		1	5
Central Dispatch for Aeromedical EMS	4													1	4
Public education on 911 use		4												1	4
911 use awareness									4					1	4
Unified intervals for benchmarking											4			1	4
Adopt MPD statewide		3												1	3
Precise cellular 911 capabilities			3											1	3
Triage 911 calls					3									1	3
GPS/LZ zones											3			1	3
Advocate for first responder programs	2													1	2
Web-based public education		2												1	2
Forum to address system abuse					2									1	2
Identify call relay delay							2							1	2
System status management								2						1	2
ALS in non-hospital systems						1								1	1
911 funding should go to 911										1				1	1

Communications Systems

Encourage regional PSAP/PSDP	1		5		1	4	3		5	5		4	8	36
Financial support for regionalization of dispatch	3			5	5	2		5				1	6	27
Establish regional radio channel		4	4				1			4			4	17
Dispatch closest appropriate unit			3		4				4			2	4	17
Mandate th			1				5	3	3				4	16
Integrated CAD/AVL/GPS			2	1						3	3		4	13
Interoperability fire/police/EMS										2	5	3	3	13
Continue state rollout of EPCR				2	2								2	6
Standards for aeromedical dispatch	5												1	6
Proper use of what already exists		5											1	6
Cell phone priority use status						5							1	6
Elevate/professionalize EMD												5	1	6
Review aeromedical utilization	4												1	5
Require compliance with JEMS radio plan				4									1	5
Medical oversight of dispatch protocols							4						1	5
Call volume based communications system								4					1	5
Coordination of hospital-field comm											4		1	5
CAD data to populate PCR				3									1	4
PSAP/PSDP to know unit location					3								1	4
Make data available from PSAP/hospitals						3							1	4
Aeromedical services connected by technology	2												1	3
Hospital MCI coordination							2						1	3
Monitoring/supervision of EMD training								2					1	3
EMS input into communications issues									2				1	3
Mayday locator system											2		1	3
Standardize terms for unit typing									1				1	2
Revise EMS law											1		1	2
Establish a back-up/sattelite													0	0

Clinical Care																
Annual review of scope of practice			1		1				5		3	5	4	6	19
Two EMT-B minimum on ambulances	5		5					2						3	12
Staffing levels determined by regional authorities			3					3		4				3	10
Evidence based protocols						1					5		3	3	9
Expand the scope of paractice/service for EMT-Bs	3		2		3									3	8
Closest appropriate unit dispatched		4				4								2	8
Mandate BLS standards								5		3				2	8
Evidence based scope of practice						3						4		2	7
Pilot ALS delivery models						2							5	2	7
Measurable benchmarks										5			2	2	7
Close the outcome loop					2		4							2	6
Expand ALS Scope											3		1	2	4
Complete aeromedical system evaluation		5												1	5
Specialty care protocols				5										1	5
Active BLS care					5									1	5
Revisit staffing tiers						5								1	5
Allow for providers to work in other areas							5							1	5
Allow certification to follow the provider	4													1	4
Provider can triage to multiple points of entry			4											1	4
Universal credentialing for all EMS personnel				4										1	4
Support concept of response time standards					4									1	4
All jurisdictions must be part of the EMS system								4						1	4
Expand BLS/EMT training processes									4					1	4
Continue current SVC rules											4			1	4
SCV-3providers, 1RN/2EMT minimum 2 persons with the patient		3												1	3
Develops specialty care protocols							3							1	3
Training for nursing homes												3		1	3
One EMT-P minimum	2													1	2
Primary response area designated for helicopters		2												1	2
Funding of clinical care projects							2							1	2
System where number of critical care providers is based on need								2						1	2
review immunity shield									2					1	2
Allow alternative pathways/destination	1													1	1
Support for 2 medic MICU		1												1	1
Clarify HIPPA							1							1	1
Tie recert to paractice														0	0

Information Systems

Statewide EMS database		4	5		3		4	5	5	5	5	3	9	39
Statewide PCR		5	4	1	5	4				4		4	7	27
Funding for technology	4	2					5	4	4		3		6	22
Require PCR for all patient encounters	3	3							3		4	5	5	18
Web based communications system for access by all			3		2				2	1	2		5	10
Develop system to share data							3	3	1	2			4	9
Require technology	5						1			3			3	9
Coordination of info systems by OEMS	2			2		5							3	9
PCR integrated with dispatch				4		2						2	3	8
Establish performance benchmarks						1	2						2	3
MDTs on all EMS units				5									1	5
Electronic communications to send data					4								1	4
State provision of EMD software				3									1	3
Secure credentialing system						3							1	3
Public health access for surveillance			2										1	2
Consider targeted grant request		1											1	1
PCR not to conflict with QI			1										1	1

Evaluation

Internal QI process	4						3	4		4		2	5	6	22
Timeline for evaluation	5		4	4	4	3								5	20
Publish results and recommendations to the EMS community	2	3				5		5					2	5	17
Independent evaluation of OEMS	3				2		2		5	3				5	15
Benchmarking		5	3		5									3	13
Standards developed for shortcomings								2		5			5	3	12
Access to statewide data					3			3	4					3	10
Mandatory data collection						4	4							2	8
Patient outcome data											4	3		2	7
Accept national accreditation for state requirements			2				1							2	3
Peer-based evaluation			5											1	5
Funding for info/comm systems				5										1	5
Balanced scorecard							5							1	5
Evaluate patient care protocols											5			1	5
Post-incident case review												5		1	5
Continue to use mid atlantic												5		1	5
Update air ambulance reporting		4												1	4
Mandate PCR use											3			1	3
Vehicle standards			1											1	1
360 Degree evaluation					1									1	1
Evaluate research data												1		1	1

APPENDIX D: PARTICIPANTS IN THE NEW JERSEY EMS FOCUS GROUPS

We wish to thank the following New Jersey EMS Providers and Provider Organizations for participating in one of the EMS Focus Groups. Their insight and experiences added to the depth and breadth of the study.

New Jersey Paramedic Assoc./New Jersey Hospital Assoc.

Art Kreyling, Solaris Health System

Jeff Behm, MONOC

Jim Baca, Underwood Memorial

Steve Cohen, Jersey City Medical Center

Scott Kasper, Virtua Health

Mark Veenema, St. Josephs Health Care System

Roger Sarao, New Jersey Hospital Association

William Dougan, University Hospital

Jackie McNally, Chilton Memorial Hospital

EMS Educators

Jerry Schwartz, Bergen County EMS

Scott Matin, MONOC/Ocean Community College

Mathew Scott, Virtua Health

Paul Yasbin, Atlantic Ambulance Corporation

Janemary Lutz, Robert Wood Johnson University Hospital

Jennifer McCarthy, Union County College

Harvey Weber, Hudson County Community College

Chris Lysy, Jersey Shore Medical Center/Elizabeth Fire Department

Patricia Lutz, Underwood Memorial Hospital MICU

Chip McFaddon, Warren/Hunterdon County EMS Coordinator

David Langley, University Hospital EMS

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Bucky Buchanan, Hunterdon County

Michael Bascom, Monmouth County

Leroy Gunzelman, Somerset County

Matt Hempel, Burlington County

Eskil S. Danielson, Sussex County

Bryan Fischberg, Mercer County

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Angie Mazzella, Anheuser-Busch Emergency Response Team

Jeffrey Fenton, Tewksbury EMS

Joyce Midure, Winslow EMS

Jim Sutton, Jefferson Township Rescue Squad

Ed Murawski, Perth Amboy Fire Department

Jim Arsenault, Sea Isle Ambulance Corp

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Henry Sisbarro, Union Township EMS

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Julie Aberger, NJSFAC

Howard Meyer, NJSFAC

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Jack McKevitt, New Jersey State Police

Dave Rebuck, New Jersey Office of the Attorney General, NJSP

Linda Whitworth, Virtua Health SouthStar

Steven D. Olsen, MONOC Air Medical Services

Susan Caputo, Atlantic Ambulance/Atlantic Air One

Adam Zwislewski, University MedEvac

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Terry Hoben, UMDNJ University Hospital, NorthStar

New Jersey Medical Transportation Association

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Alfred Lincks, Vineland EMS

Jon Colin, Lifestar

Rich Donovan, Atlantic Ambulance

Howard Kaplan, Exceptional Ambulance

Rod Davis, Alert Ambulance

Margaret Keavney, MONOC

Mickey McCabe, McCabe Ambulance

Chuck Kraczmaska, Hammonton Rescue Squad

Emergency Medical Dispatchers

Joseph Burlew, University Hospital/REMCS

Albert J. McNally, Jr., MICCOM Communications

Gareth Williams, Atlantic Health Systems

John J. Cuccia, Jr., Monmouth County Communications

Charles W. Mars, OETS, New Jersey 911

James Moore, Camden County Communications

EMS Physicians

Dr. Jennifer Waxler, New Jersey EMS Council

Dr. Stephen Vetrano, MICU Advisory Council, BLS Subcommittee

Dr. James N. Pruden, St. Joseph's Regional Medical Center

Dr. Chang (Bill) Wang, Jersey City Medical Center

Dr. William Gluckman, UMDJ-University Hospital

Dr. Mark Merlin, MICU Advisory Council

Dr. Thomas Brabson, Atlantic Regional Medical Center

Dr. Sol Nevins, Morristown Memorial Hospital

Dr. Steven Marcus, New Jersey Poison Information and Education Center

Dr. Jeff Hammond, New Jersey Trauma Center Council

New Jersey Fire Chiefs Association

Peter F. Smeraldo, Jr., West Orange Fire Department

Frank Cals, West Orange Fire Department

Jim Davidson, Hanover Township #3 Fire Department

Tom Canzanella♣, Professional Firefighters of New Jersey

Tom Gironda, Asbury Park Fire Department

Frank D'Amore, North Plainfield Fire Department

Cheryl L.J. Willois, West Windsor Fire Department

Anthony Correia, Burlington Township Fire Department

EMS Administrators

Ray Kragosovics, Trenton EMS

Fran Pagurek, Mount Laurel Township EMS

Randall McCargar, Cherry Hill Fire Department

Vincent Robbins, MONOC

Louis Sasso, Robert Wood Johnson EMS

Kevin Geoghegan, Toms River Police Department

David Gwin, Hillsborough EMS

Paramedics

Mark Reading, Somerset Medical Center

John Nichols, Rahway Hospital

Mike Scala, UMDNJ, Newark

Kevin Webb, St. Joseph's Regional Medical Center

Tracy Connellan, MONOC

Mary Daley, MONOC

John Kovacs, Robert Wood Johnson EMS

Michael Reilly, Hackensack Medical Center

Susan Gorleski, Virtua Health

James R. Newman, Virtua Health

Andy Lowell, Logan EMS

♣ Deputy Chief Canzanella died on June 12, 2007

Debra L. Bell, Underwood and Atlanticare

Critical Care

Carl Corrier, UMDNJ/NorthStar

Linda Reid, MONOC

Joe Schilli, Virtua/SouthStar

Bruce Tomaszewski, Capital

Joy Bourgeous, Exceptional Medical Trans

Alison Stephen, MONOC/AtlanticHealth/ENA

Ed Collins, NJ ENA

APPENDIX E: SWOT ANALYSIS FOR NEW JERSEY EMS

Critical Areas	Strengths	Weaknesses	Opportunities	Threats
System Assessment	-Public Access -Participation by diverse provider groups	-EMS Research-Unsatisfactory -System Finance-Unsatisfactory -Except for Public Access, no component scored above "marginal." -Information systems have yielded little usable data -Legislation and Regulations are too restrictive -All providers are not regulated	-Challenges have been identified -Input has been received from multiple provider constituents -Participation and consensus may offer the ability to make quicker changes	-Complacency may lead to a loss of momentum for change -Many feel that legislative or system inaction will lead to further malaise
EMS Legislation and Regulation	-Governor's signing of the Regional 911 Center legislation promoting regionalization	-Lack of comprehensive EMS legislation and regulations -Primary legislation is restrictive instead of enabling -EMS legislation in multiple areas of the law -Regulation change process is cumbersome and takes too long. -Too many changes are done using an "exception" process -Medical protocols are in regulations instead of a protocol document	-Legislatively mandated study may indicate the state's willingness to change -Since needed changes are identified, new legislation may be easier to draft	-Political pressure on the legislature to not act. -Failure to make legislative changes provides a "free pass" for EMS system constituents. -Failure to change may lead to system component failures

Critical Areas	Strengths	Weaknesses	Opportunities	Threats
New Jersey State EMS System	-The system is based within the healthcare system -Emergency management programs are being developed to promote systematic thinking	-NJOEMS too low in the healthcare structure -Lack of regionalization -Local municipalities not legally obligated to provide EMS -NJOEMS lacks depth due to staffing reductions -Too many minor "technical" issues having to be handled at the state level -Too many "non-players" in the system (unlicensed/unregulated)	-Changes in emergency communications and emergency management are promoting a systems approach -Changing the communications system is well-timed in regards to changing EMS -Enhancement of NJOEMS will allow for implementation of other changes (ALS programs, education, information management, etc.)	-Lack of change could lead to system component instability (unable to respond to critical issues) -NJOEMS being unable to exert oversight
Air Medical EMS	-State program in-place -Good patient care is being provided -System has integrated public and private providers -Excellent safety record	-Possible over-saturation, too many helicopters for need -Pressure on the state to design a system to promote private air medical services -Vehicle registration fees appear to benefit State Police. -Fly vs. drive protocols not being followed -JEMSTAR fee is too low to cover EMS care costs	-Commercial services can properly plan to determine viability of air medical services -No additional state helicopters needed. -NJOEMS can solidify rules for commercial air medical participation	-CMS may begin to determine EMS reimbursement based on a fly vs. drive protocol
Advanced Life Support (ALS)	-Excellent clinical care -Committed physician	-Limiting ALS to hospital-based systems may lead to service	-New constituents can become involved in ALS.	-Hospitals may drop ALS projects due to lack of

Critical Areas	Strengths	Weaknesses	Opportunities	Threats
Delivery	medical oversight -NJOEMS has better control of programs -May offer control of over-saturation -100% statewide ALS coverage	gaps -Limiting the ability for ALS programs to transport negatively affects depth of service and financial solvency -Two medic requirement contributes to ALS provider shortage -First Aid Squads not able to guarantee transport services -CMS and private insurance reimbursement is based on transport of the patient	-EMS system will not be dependent on one delivery model. -ALS providers being able to transport may fill transportation gaps	profitability. -Failure to adopt solid, evidence-based standards may lead to a loss of system control -ALS programs that provide transport may lose senior workers due to physical requirements
EMS Workforce Issues	-Dedication of the volunteer EMS community -The ability to provide necessary training	-Fewer people seeking EMS careers -Fewer people able to volunteer -Increased training requirements -Some volunteer services are not well-managed	-Women and minorities may help increase EMS workforce -Consolidation efforts could result in more efficient volunteer services -Opening in-hospital career opportunities may help the workforce develop -Citizen Corp could be used to help with recruitment	-Societal shift from rural to urban/suburban -Volunteers cannot afford to live in areas they volunteer in -Continually increasing training requirements -Volunteer leadership being unwilling to change management philosophies