



# EMS Workforce Planning & Development

GUIDELINES FOR STATE ADOPTION



October 2014

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## Acronym List

ACOs	Accountable Care Organizations
ACEP	American College of Emergency Physicians
AEMT	Advanced Emergency Medical Technician
ALS	Advanced Life Support
AMA	American Medical Association
BLS	Basic Life Support
CES	Current Employment Statistics
CMS	Centers for Medicare & Medicaid Services
CPS	Current Population Survey
CAAHEP	Commission on Accreditation of Allied Health Education Programs
CoAEMSP	Committee on Accreditation of Educational Programs for the EMS Professions
HHS	Department of Health & Human Services (federal)
DOL	Department of Labor
EMR	Emergency Medical Responder
EMT	Emergency Medical Technician
EMT-I	Emergency Medical Technician – Intermediate
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
FTE	Full-Time Equivalent
HRSA	Health Resources and Services Administration
HWIC	Health Workforce Information Center
HWRC	Health Workforce Research Centers
ITAs	Individual Training Accounts
LEADS	Longitudinal EMT Attributes and Demographics Study
LPN	Licensed Practical Nurse
LVN	Licensed Vocational Nurse
LWIB	Local Workforce Investment Boards
NAPA	National Academy of Public Administration
NASEMSO	National Association of State Emergency Medical Services Officials
NASWA	National Association of State Workforce Agencies
NCSEMSTC	National Council of State Emergency Medical Services Training Coordinators
NCES	National Center for Education Statistics
NEMSAC	National EMS Advisory Council
NEMSIS	National EMS Information System
NGO	Non-Governmental Organization
NHWC	National Health Care Workforce Commission
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NTCCM	Nursing Turnover Cost Calculation Methodology

NREMT	National Registry of Emergency Medical Technicians
OES	Occupational Employment Statistics
OSHPD	Office of Statewide Health Planning and Development
PPACA	Patient Protection and Affordable Care Act
UI	Unemployment Insurance
TAC	Technical Assistance Center
WIA	Workforce Investment Act
WMD	Weapons of Mass Destruction

**Note:** This is the first generation of workforce related guidelines; future work may evolve. These guidelines are developed as a tool and they do not address issues related to staffing, ambulance distribution and access or population-based supply, demand and needs assessments.

## Foreword

In the United States, emergency medical care is available to individuals suffering from medical emergencies and traumatic injuries. The core components of this system typically consist of 9-1-1 centers and operators, first responders, Emergency Medical Services (EMS) personnel, air medical services and hospital emergency departments.

The term “EMS “ is sometimes used to reference this entire continuum, but in this document the term EMS is used to specifically refer to the segment that provides services associated with ground ambulances and air medical services used for response and transport. Emergency Medical Responders (EMRs), Emergency Medical Technicians (EMTs), Advanced EMTs (AEMTs) and paramedics are the frontline providers of this EMS system. According to the 2011 *EMS Workforce Agenda for the Future*, “[a] principle component of any EMS system is its workforce. The ability of an EMS system to deliver high quality prehospital emergency care depends upon a qualified and capable workforce.”

In light of our rapidly changing healthcare landscape it may be difficult to predict all aspects of supply, demand and need for the EMS workforce. However, growth rates of more than double the average workforce are anticipated for EMTs and paramedics.<sup>1</sup> Even though considerable time and attention has been spent over the past decade on EMS workforce, there are still significant gaps in data and understanding and very limited activity to address these issues as a cohesive effort.

The purpose of this document is to provide recommendations and strategies in the form of guidelines to the State EMS Offices in order to encourage and guide them in a collective, national effort to address core workforce issues. It is critical for State EMS Offices to take definitive action in order to contain and address the current and future challenges of the EMS workforce. Kansas serves as an example state that has already worked to understand the input and output variables of their educational system and they know the percentage of individuals who complete education and become certified and licensed. Without this critical information about the education pipeline no state can adequately plan and fund their state’s EMS workforce needs.

The most successful State EMS Offices will not attempt to do this work alone. Engagement of their local EMS agencies, educational institutions and State Workforce Agencies will determine the level of success the State EMS Office achieves. The ultimate outcome is for all states to accomplish the desired outcomes of these Core Ten EMS Workforce Guidelines, thereby achieving a significant step to improve the readiness of the EMS workforce for the future.

*The purpose of this document is to provide recommendations and strategies in the form of guidelines to the State EMS Offices in order to encourage and guide them in a collective effort to address core workforce issues.*

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<sup>1</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, 2012-13 Edition, EMTs and Paramedics, on the Internet at <http://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm> (accessed March 25, 2013)

## Executive Summary

More than 826,000 women and men, in both paid and volunteer roles, provide response to more than 36.5 million calls and treatment and transport to more than 28 million patients each year.<sup>2</sup> Calls for help are answered in both rural and urban settings, regardless of weather, location or time of day. Emergency medical care is provided to patients of every age, regardless of complaint, environment or cause. While there is an increasing amount of clinical and operational data available to leaders in the field of EMS, there is little known about the workforce and how to plan for the future of these vital services. State EMS Offices are called to initiate these 10 guidelines and provide a foundation for ongoing efforts to, “recruit and maintain a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.”<sup>3</sup>

This document, the “Emergency Medical Services Workforce Planning & Development Guidelines for State Adoption” (EMS Workforce Guidelines) does not attempt to address all aspects of the current and potential needs and demands on the EMS workforce but instead recommends 10 core practices that are recommended to begin the process in a data driven and cohesive way. The vision of this work is that these “Core Ten Guidelines” will become the foundation for State EMS Offices to work among themselves to advance their collective knowledge and understanding of the EMS workforce. State EMS Offices are asked to work with their local EMS agencies, EMS educational institutions and their State Workforce Agencies to take these 10 fundamental steps toward achieving a long-standing goal set forth in the *Emergency Medical Services Workforce Agenda for the Future* (EMS Workforce Agenda)(2011), to successfully “recruit and maintain a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.”<sup>4</sup>

The vision of this work is that these “Core Ten Guidelines” will become the **foundation** for State EMS Offices to work among themselves to **advance their collective knowledge and understanding of the EMS workforce.**

In addition to the EMS Workforce Agenda, considerable time and attention has been spent over the past decade to attempt to better understand and anticipate the supply, demand and needs of the EMS workforce. This work also includes but is not limited to the *National Emergency Medical Services Research Agenda* (EMS Research Agenda)<sup>5</sup>, the

<sup>2</sup> Federal Interagency Committee on Emergency Medical Services (FICEMS), *2011 National EMS Assessment*, U.S. Department of Transportation, National Highway Traffic Safety Administration, 2012, on the Internet at [http://www.ems.gov/pdf/2011/National\\_EMS\\_Assessment\\_Final\\_Draft\\_12202011.pdf](http://www.ems.gov/pdf/2011/National_EMS_Assessment_Final_Draft_12202011.pdf) (Accessed February 12, 2013)

<sup>3</sup> United States. National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services, *Emergency Medical Services Workforce Agenda for the Future*, 2011, on the Internet at [http://www.ems.gov/pdf/2011/EMS\\_Workforce\\_Agenda\\_052011.pdf](http://www.ems.gov/pdf/2011/EMS_Workforce_Agenda_052011.pdf) (Accessed January 10, 2013)

<sup>4</sup> Ibid, NHTSA, *Emergency Medical Services Workforce Agenda for the Future*

<sup>5</sup> United States. National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services,

*Emergency Medical Services Workforce for the 21<sup>st</sup> Century: A National Assessment* (EMS Workforce Assessment)<sup>6</sup>, and the *2011 National Emergency Medical Services Assessment* (2011 EMS Assessment).<sup>7</sup> These and other efforts have dramatically improved our understanding of EMS workforce issues, but more work is needed

The EMS Workforce Guidelines document foundation is in both the EMS Workforce Assessment and the EMS Workforce Agenda. The primary objective of the EMS Workforce Assessment was to, “address issues relevant to the process of workforce planning.”<sup>8</sup> The EMS Workforce Assessment provides a listing of 12 critical policy issues necessary to understand the supply, demand and need of the distinctive EMS workforce. While EMS personnel are known for their high level of devotion to the field, they receive comparatively low pay and meager benefits. The majority of the critical policy issues highlighted also points out the lack of available and reliable data-related workforce issues and the underdeveloped infrastructure necessary to collect this information. The fundamental hope outlined in the EMS Workforce Assessment is that there is a distinct need to develop this infrastructure and a real opportunity to improve our understanding of EMS workforce needs now and into the future.

The EMS Workforce Agenda outlines four focus areas that are the basis for moving forward:

- Health, Safety and Wellness
- Education and Certification
- Data and Research
- Workforce Planning and Development

The Core Ten Guidelines are all categorized based on these areas to help ensure continuity of efforts but also because all four areas remain relevant and elusive. EMS personnel are in one of our nation's highest risk professions with risk of mortality almost triple that of the average worker.<sup>9</sup> The Bureau of Labor Statistics is home to a wealth of information including its forecasted 33% growth in demand for EMTs and paramedics between 2010 and 2020 while the average for all occupations is only 14% (see graph below).<sup>10</sup> This demand must be met with adequate supply of qualified, certified and licensed EMS personnel. Workforce supply is a function of understanding education,

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*National EMS Research Agenda*, 2001, on the Internet at <http://www.ems.gov/pdf/EMSResearchAgenda.pdf> (Accessed January 10, 2013)

<sup>6</sup> United States. National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services, *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment*, 2008, (No. DOT HS 810 943), on the Internet at [http://www.ems.gov/pdf/EMSWorkforceReport\\_June2008.pdf](http://www.ems.gov/pdf/EMSWorkforceReport_June2008.pdf) (Accessed January 10, 2013)

<sup>7</sup> Ibid, FICEMS, *2011 National EMS Assessment*

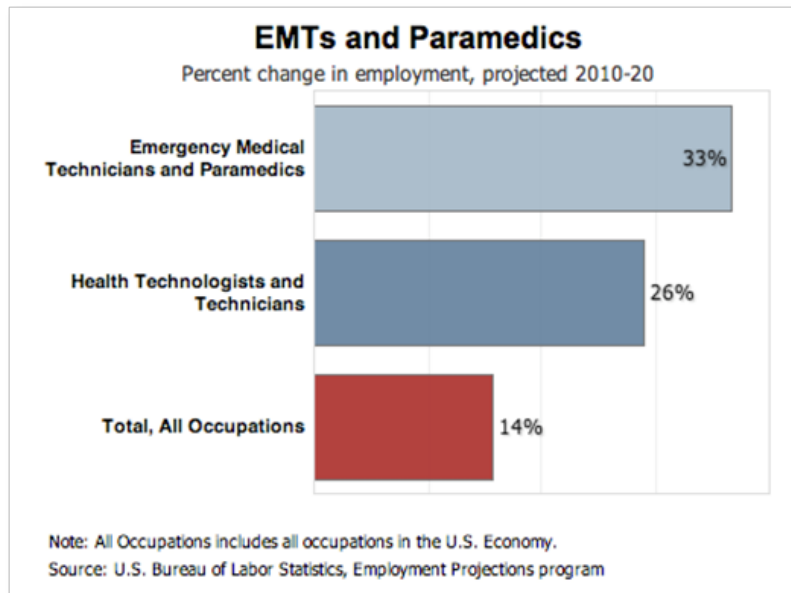
<sup>8</sup> Ibid, NHTSA, *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment*

<sup>9</sup> Maguire BJ, Hunting KL, Smith GS, Levick NR, *Occupational Fatalities in EMS: A Hidden Crisis*, *Annals of Emergency Medicine*. 2002; 40(6): 625-632

<sup>10</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, 2012-13 Edition, EMTs and Paramedics, on the Internet at <http://www.bls.gov/ooh/healthcare/emts-and-paramedics.htm> (accessed March 25, 2013)



certification, and licensure processes. Fortunately there is a tremendous resource in every state for workforce planning and development but they are rarely in active partnerships with the State EMS Offices. State Workforce Agencies have the expertise and responsibility for this work. Most critically, the lack of useful, consistent and available workforce data is the fundamental hindrance to all workforce planning and development.



### Purpose Statement

The purpose of the EMS Workforce Guidelines is to provide recommendations and strategies in the form of guidelines. These guidelines are intended to help show states, under the leadership of the State EMS Offices, how to begin to systematically address the current and future EMS workforce needs.

### Overview of Guidelines

There are 10 core guidelines in this document. All guidelines fall into one of the four categories outlined in the EMS Workforce Agenda (Health, Safety and Wellness, Education and Certification, Data and Research, Workforce Planning and Development). Each guideline is presented with a: recommended activity, background information, a statement of rationale explaining its importance, fundamental considerations for implementation of the guideline, any data required, and a desired outcome. Those guidelines that utilize data also provide the suggested methodology as to how to use the data according to common workforce practices.

The following is a basic listing of the guidelines intended to be used by State EMS Offices as recommendations and strategies:

**Guideline 1:** Data & Research - ***Acquire Essential Workforce Data***

Collect a core set of workforce data elements to address workforce assessment, planning and policy issues.

**Guideline 2:** Workforce Planning & Development - ***Engage Local EMS Agencies***

Local EMS agencies need support and guidance to be able to recruit and maintain a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.

**Guideline 3:** Workforce Planning & Development - ***Engage State Workforce Agencies***

The State Workforce Agency develops and maintains a statewide comprehensive system of services that prepares, supports, and enhances the economic health of the workforce.

**Guideline 4:** Education & Certification - ***Credential EMS Educators***

States should credential EMS educators based upon their ability to successfully prepare students for competency based testing.

**Guideline 5:** Education & Certification - ***Obtain Educational and Institutional Data (Workforce Supply)***

States should be able to track the number of individuals at each interval of the education, certification, and licensure process for each personnel level.

**Guideline 6:** Education & Certification - ***Understand the EMS Education Pipeline (Workforce Supply)***

Utilize available information to analyze and address needs in and performance of the state EMS education system.

**Guideline 7:** Workforce Planning & Development - ***Quantify Population Actively Functioning in a Paid or Volunteer Capacity (Workforce Supply)***

States should use data collected to quantify the population entering and continuing to function in the EMS workforce.

**Guideline 8:** Workforce Planning & Development - ***Understand EMS Workforce Demand***

Utilize available information to analyze and understand the number of EMS jobs available for various types of personnel.

**Guideline 9:** Workforce Planning & Development - **Support Military & Spouses Transitioning to the EMS Workforce After Military Service**

States should support separating service members, veterans and their spouses who seek to obtain EMS certification and/or licensure through necessary policy, education and legislation.

**Guideline 10:** Health, Safety & Wellness – **Maintain a Healthy EMS Workforce**

The State EMS Office is encouraged to collect data relating to EMS worker illness and injuries.

### Conclusion

The EMS workforce of today and the future is a fundamental element of our nation's healthcare delivery system but one where many opportunities lie to help individual patients and communities have better health and improved care at a decreased cost. This document, the EMS Workforce Guidelines, will be the foundation for practical, effective and replicable efforts to improve the availability, quality and safety of the EMS workforce. The success of this effort will be determined by the level of leadership from State EMS Offices and their ability to engage with their local EMS agencies, educational institutions and State Workforce Agencies. This work is challenging and will take a focused and concerted effort by all parties to complete. Without these practical and critical steps the stability and sustainability of the EMS workforce cannot be assured.

## Background, Rationale and Needs Assessment

The National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services and the Health Resources and Services Administration's (HRSA) Emergency Medical Services for Children (EMSC) Program have funded two significant documents related to issues concerning the current and future EMS workforce. The *EMS Workforce for the 21st Century: A National Assessment*, (EMS Workforce Assessment)<sup>11</sup> was published in May 2008 and the *Emergency Medical Services Workforce Agenda for the Future* (EMS Workforce Agenda)<sup>12</sup> was completed in May 2011. The overall goal of these projects was to establish "a national agenda for the future that helps ensure a viable EMS workforce." It is important to understand the background and work within these documents in order to understand the recommendations provided in these guidelines.

### Summary of EMS Workforce for the 21st Century: A National Assessment

The EMS Workforce Assessment concludes that the EMS workforce is comprised of volunteer and paid employees and uniquely bridges healthcare and public safety. This distinctive workforce is known for its high level of devotion to the field of EMS despite comparatively low pay and meager benefits. This assessment also points out the paucity of data available on workforce issues and the underdeveloped infrastructure necessary to collect this information. The fundamental hope outlined in the EMS Workforce Assessment is that there is a distinct need to develop this infrastructure and a real opportunity to improve our understanding of EMS workforce needs now and into the future.

The primary objective of the assessment was to, "address issues relevant to the process of workforce planning."<sup>13</sup> Four research questions were outlined:

1. Will the EMS workforce be of adequate size and composition to meet the needs of the U.S. population in the future?
2. How can potential workers be attracted to and encouraged to stay in the field of EMS?
3. How can adequate EMS workforce resources be available across all populations and geographic areas?
4. Do we have the data and information needed to address the future demand for and supply of EMTs and paramedics in the United States? What information is lacking and how might it be obtained?

Between 2004 and 2006 the EMS Workforce Assessment utilized a variety of methods to answer these four questions. This research included a literature review dating back to

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<sup>11</sup> Ibid, NHTSA, *EMS Workforce for the 21st Century: A National Assessment*

<sup>12</sup> Ibid, NHTSA, *Emergency Medical Services Workforce Agenda for the Future*

<sup>13</sup> Ibid, NHTSA, *EMS Workforce for the 21st Century: A National Assessment*, p. 7

1973, ample numbers of interviews, surveys and field observations as well as extensive Internet searches and utilization of an online blog for direct interaction and feedback. Data were also reviewed from the Longitudinal EMT Attributes and Demographics Study (LEADS) and the National Registry of Emergency Medical Technicians' (NREMT) re-registration processes.

In order to be relevant and congruent with other workforce planning documents and research, the EMS Workforce Assessment utilized previously accepted terms of Workforce Supply, Workforce Demand, and Workforce Shortage. These terms are commonly used in disciplines of organizational and human resources management and have been adopted by models developed by HRSA.<sup>14</sup> It is essential to understand the basic definitions of these terms in order to properly utilize the guidelines.

### Workforce Supply

*Note: The data listed here is valuable but outdated as it is the most recent comprehensive data available. The Core 10 Guidelines will be a source for this and other valuable EMS workforce data.*

The EMS Workforce Assessment cites the American Medical Association's (AMA's) Annual Program Survey in 2004 which reports 2,991 graduates from 178 programs. A 2005 survey by the National Council of State Emergency Medical Services Training Coordinators (NCSEMSTC) found 639 accredited or otherwise state-approved programs among the 42 states responding to the survey. The AMA recognizes that educational programs are accredited by the Commission on Accreditation of Allied Health Education Programs' (CAAHEP's) Committee on Accreditation of Educational Programs for the EMS Professions (CoAEMSP).<sup>15</sup> CAAHEP currently lists 353 accredited "Emergency Medical

Technician-Paramedic" programs on its website and does not differentiate other levels of education.<sup>16</sup>

### Workforce Demand

Workforce demand was defined as the number of jobs available for various types of personnel, filled and unfilled, and the number of projected jobs available in the future. Workforce demand factors include retention, worker satisfaction with wages and other working conditions.

<sup>14</sup> Health Resources and Services Administration, Bureau of Health Professions, & National Center for Health Workforce Information and Analysis. (2004). *HRSA State Health Workforce Data Resource Guide*. Rockville, MD: U.S. Department of Health and Human Services. Page 13

<sup>15</sup> American Medical Association (AMA), *Allied Health, Emergency Medical Technician-Paramedic*, on the Internet at <http://www.ama-assn.org/resources/doc/med-ed-products/ah06-emergency-medical-technician-paramedic.pdf> (accessed June 7, 2013)

<sup>16</sup> Commission on Accreditation of Allied Health Education Programs (CAAHEP), *CAAHEP Accredited Program Search*, tab, on the Internet at <http://www.caahep.org/Find-An-Accredited-Program/> (accessed June 10, 2013)

The Bureau of Labor Statistics projected that an additional 75,400 EMTs and paramedics would be needed, and an additional 45,400 would be needed to replace those leaving the profession between 2010 and 2020.<sup>17</sup> This represented 120,800 new and replacement positions needed. The Bureau of Labor Statistics data provides a limited perspective of actual demand although it was reported to be the most robust source of data.

The Bureau of Labor Statistics projection was calculated from three data sources, the Occupational Employment Statistics (OES), the Current Employment Statistics (CES) surveys and the Current Population Survey (CPS). Both the OES and CES surveys drew their samples from the state unemployment insurance (UI). These UI files are used because they are the most comprehensive and up-to-date source of information regarding employment figures capturing roughly 97% of total employment figures. The CPS survey is a household survey. However, given that Bureau of Labor Statistics data *excludes* volunteers, this is an underestimate of future workforce demand, particularly in rural areas where volunteers make up a significant portion of the number of providers.

Limited availability of detailed workforce data made it difficult to compare wages for EMTs and paramedics with other occupations. The Bureau of Labor Statistics Occupational Employment Statistics program reported in May 2012 mean and median hourly rates for EMTs and paramedics of \$16.53 and \$14.91 respectively.<sup>18</sup> When compared to firefighters, police/patrol officers and licensed practical nurses/licensed vocational nurses (LPNs/LVNs), a stark contrast is apparent.

Occupation	Mean Hourly Wage (\$)	Median Hourly Wage (\$)
EMTs and Paramedics	16.53	14.91
LPN & LVN	20.39	19.97
Firefighters	23.00	21.75
Police & Sheriff's Patrol Officers	27.78	26.57

A 2005 NREMT survey found that dissatisfaction with wages, benefits, and advancement opportunities were the most frequently cited aspect of the job by more than 20% of respondents. These findings were consistent with the LEADS study that found 44.8 percent of EMTs reported pay and benefits are “very important,” and 30.3 percent said they are “moderately important.” Among paramedics, 70.2 percent said pay and benefits are “very important,” and 26.1 percent said they are “moderately important.” Significantly more paramedics than EMTs responded that pay and benefits are very important. There is an urgent need to address issues of wages, compensation, employee benefits, career ladders, and other means of promoting employee growth, advancement, and satisfaction.

<sup>17</sup> United States. Bureau of labor statistics, *Employment Projections: Employment by Occupation*, United States Department of Labor, 1 Feb 2012. On the Internet at [http://www.bls.gov/emp/ep\\_table\\_102.htm](http://www.bls.gov/emp/ep_table_102.htm) (Accessed April 18, 2013)

<sup>18</sup> United States. Bureau of labor statistics, *Employment Projections: Employment by Occupation*, United States Department of Labor, 1 Feb 2012. On the Internet at [http://www.bls.gov/emp/ep\\_table\\_102.htm](http://www.bls.gov/emp/ep_table_102.htm) (Accessed April 18, 2013)

### *Workforce Shortages*

A shortage can result from attrition (reduction in supply) or from growth in the number of positions (increase in demand). Measures such as the percent of vacant positions, the use of overtime and temporary personnel, the inability to provide services, or delays in service can be used to evaluate shortages. Increases in compensation, including wages, bonuses, and benefits, can also indicate management reaction to workforce shortages.

The assessment documented that data regarding EMS workforce shortages are not readily available on a national level for several reasons. At the time of the assessment there were a total of 48 different levels of EMS providers. Oversight, regulation, and the provision of resources for EMS systems are provided by a wide variety of bodies including but not limited to: states, counties, hospitals, local communities or municipalities, tribal government, and the federal government. In addition, differences in local geography or topography and the size and distribution of the population served (rural vs. urban) have an impact on the EMS workforce.

### *Critical Policy Issues*

Twelve critical policy issues were identified for further research and consideration for the development of the EMS Workforce Agenda. These were:

1. Establish consistent definitions for provider levels and workforce terms (e.g., credentialing, registration, certification, and licensure).
2. To manage the capacity of EMS education, more complete data particularly on proprietary and agency-based programs is necessary.
3. Affiliation with an agency is often required in EMS education programs although the requirements vary widely among states. This results in difficult assessment of the impact of affiliation on the supply of EMS workers.
4. Although rural areas consistently report a shortage of workers, there is no quantitative data indicating there is a shortage of EMTs or paramedics. Additionally, wages are not increasing at a rate that suggests a shortage exists.
5. There exists little data showing a relationship between EMS workforce factors and patient outcomes. Much of the workforce planning that is done is based on perceived community needs rather than data.
6. Qualitative evidence suggested that retaining workers is a challenge, with poor management practices, low wages and benefits, lack of career ladders, and disability contributing to turnover which was in contrast to LEADS data on both paid and volunteer EMTs and paramedics indicating high levels of satisfaction and low intent to leave the profession.
7. A lack of systematic data on worker injury and illness made it difficult to assess their impacts on retention.
8. EMS system planning and analysis should include information on the EMS workforce, including supply, demand, recruitment, and retention.
9. A lack of data inhibits EMS workforce planning focusing on the challenges of volunteers, particularly in rural EMS systems.

10. Major regulatory changes supporting new financing structures may particularly benefit the EMS workforce in rural areas.
11. Development of models for best practices in EMS recruitment, including recruitment of racial and ethnic minorities, could assist education programs and EMS systems in recruiting effectively to meet the population's needs.
12. Development of strategies for accommodating older or more experienced workers and increasing successful recruitment and retention of older individuals would conserve the talents and experience within the EMS workforce.

### **Summary of the *Emergency Medical Services Workforce Agenda for the Future***

The EMS Workforce Agenda built upon the EMS Workforce Assessment to “envision a future, in which all EMS systems have a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.” To that end it identified the following four components as, “critical to developing an EMS workforce that will thrive and be a driving force for achieving integrated, community-based EMS systems:”<sup>19</sup>

- Health, safety and wellness of the EMS workforce
- Education and certification
- Data and research
- Workforce planning and development

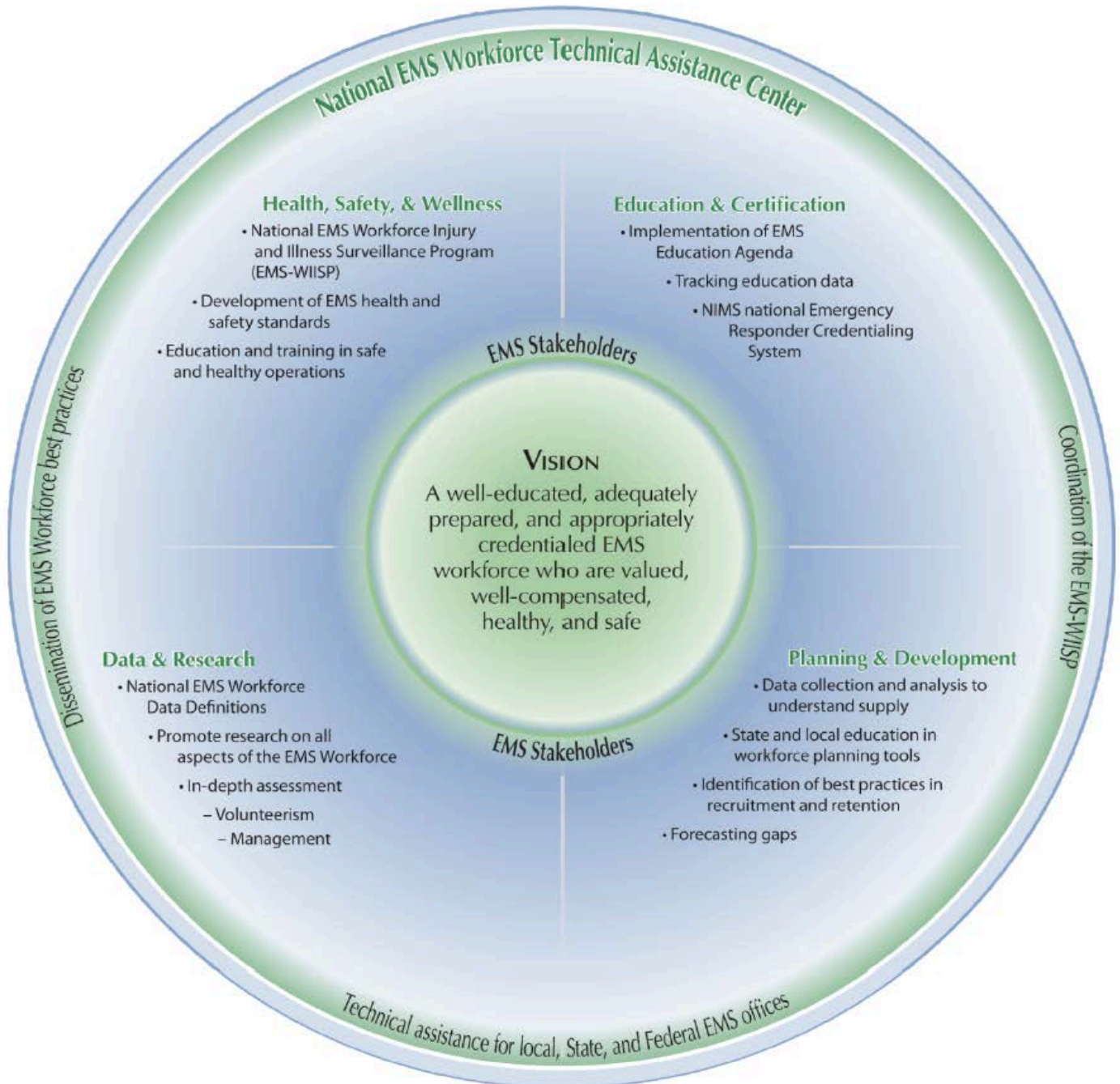
The diagram on the following page represents these four essential components of the EMS Workforce Agenda in relation to key stakeholders, the concept of the national Technical Assistance Center (TAC) and the vision for the future EMS workforce.<sup>20</sup>

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<sup>19</sup> Ibid, NHTSA, *The Emergency Medical Services Workforce Agenda for the Future*, pg 1

<sup>20</sup> Ibid, pg 6





## ***Health, Safety and Wellness of the EMS workforce***

The EMS Workforce Agenda strongly suggested that a national EMS Workforce Injury and Illness Surveillance Program (EMS-WIISP) should be developed and used for the surveillance of EMS workforce health and safety to guide and direct intervention strategies. The EMS-WIISP was proposed to provide the foundation for evidence-based safety standards, operational practices, and prevention strategies that promote and foster a culture of safety in EMS. To do this it would prioritize prevention efforts (at the local, state, and national levels) and enable the mitigation of potential new risks to

workforce health and safety. Regular literature reviews of relevant topics and feedback from individual workers, managers, and experts would also be conducted to ensure a complete assessment of the workforce health status.

Additionally the EMS Workforce Agenda recommended that the EMS profession commit to implementing the strategic goals set forth from the report of the National Public Safety Sub-Sector Agenda for Occupational Safety and Health Research and Practice in the U.S. This sub-sector group of the National Occupational Research Agenda (NORA) identified five strategic goals for emergency medical services:

1. “Reduce traumatic injury and fatalities among EMS personnel associated with vehicle crashes...”
2. “Reduce traumatic injuries among EMS personnel that occur during movement of patients and equipment...”
3. “Reduce hazardous exposures to EMS personnel through effective design and use of PPE, and proper work practices...”
4. “Identify and implement effective policies among EMS agencies regarding work organization factors to reduce related illnesses and injuries...”
5. “Create an integrated occupational health and safety surveillance data system for Emergency Medical Service (EMS) personnel and evaluate risks for their exposures, illnesses, injuries, and fatalities...”

It is relevant to mention the important work to improve the national EMS culture of safety that has taken place since the EMS Workforce Agenda. The National EMS Advisory Council (NEMSAC) was created in 2007 to provide guidance to the U.S. Department of Transportation and the NHTSA Office of EMS. This group identified the need to improve the safety issues within EMS and proposed the development of a national strategy to improve EMS culture of safety. This strategy will be outlined in a final document scheduled for final release in fall of 2013, the result of a 36-month cooperative agreement between the American College of Emergency Physicians (ACEP) and NHTSA, with support from the HRSA EMSC Program.<sup>21</sup>

### **Education and Certification**

The EMS Workforce Agenda draws directly upon the EMS Education Agenda.<sup>22</sup> The overarching objective of the EMS Education Agenda is to assure ongoing EMS professional competency. The document outlines five interdependent components that must be developed in order to achieve this objective. The first three of the following objectives have been accomplished:

1. National EMS Core Content describes the entire domain of out-of-hospital care

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<sup>21</sup> More information available on the Internet at <http://www.emscultureofsafety.org/> (Accessed March 25, 2013)

<sup>22</sup> United States. National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services, *EMS Education Agenda for the Future: A Systems Approach*, 2000, on the Internet at <http://www.nhtsa.gov/people/injury/ems/EdAgenda/final/emstoc.html> (Accessed March 25, 2013)

2. National EMS Scope of Practice Model defines the levels and entry-level competencies of EMS providers
3. National EMS Education Standards
4. National EMS Education Program Accreditation
5. National EMS Certification

The last two of these objectives are critical for the establishment of professional competency standards. Some positive steps have been taken in this direction. As stated previously, the AMA recognizes EMS workforce educational programs that are accredited by the Commission on Accreditation of Allied Health Education Programs' (CAAHEP's) Committee on Accreditation of Educational Programs for the EMS Professions (CoAEMSP).<sup>23</sup> While there is no national mandate for EMS education program accreditation the National Registry of Emergency Medical Technicians (NREMT) requires paramedics, EMTs and AEMTs to have successfully completed a state-approved course that meets or exceeds the National EMS Education Standards for their specific role.<sup>24</sup> Further, effective January 1, 2013, all paramedics must have completed their studies in a program accredited by CoAEMSP in order to be eligible for certification by the NREMT.

Although there are distinct differences, the terms "licensure" and "certification" have often been used interchangeably in the EMS industry. Certification is the process of verifying competency at a predetermined level of proficiency. Some states still use the term "certification" for the license they issue to EMS personnel; when the word "license" is used in this document it is referring to the credential issued by the state. The determination of eligibility for licensure is usually based on the completion of education requirements and the passing of an examination. Most licensure processes require some form of certification by either a state examination or the NREMT to ensure minimum entry level competence.

### **Data and Research**

A call to action was made to the national EMS community in the EMS Workforce Agenda to develop an integrated system of uniform workforce data collection. Pertinent data on the EMS workforce, including compensation, the number of paid and volunteer workers, and the number of enrollees and graduates of education programs should regularly be collected at the local and state levels and then reported nationally. Some of the most important data is not collected or has significant limitations impeding its use.

The EMS Research Agenda identified "two primary barriers that have inhibited the development of a strong research program in EMS: a paucity of well-trained researchers with an interest in EMS research and a lack of reliable funding sources to support

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<sup>23</sup> Ibid, American Medical Association (AMA), *Allied Health, Emergency Medical Technician-Paramedic*

<sup>24</sup> National Registry of Emergency Medical Technicians (NREMT), *National EMS Certification Examinations*, "Apply for National Certification," by level, on the Internet at [https://www.nremt.org/nremt/about/reg\\_para\\_history.asp](https://www.nremt.org/nremt/about/reg_para_history.asp) (Accessed May 29, 2013)

research.” The EMS Workforce Assessment extended this self-criticism of data deficits to the workforce and related research. Without more fundamental knowledge about the EMS workforce, most of the other components of the EMS Workforce Agenda and the future direction outlined will be impossible to address.

To address this gap, the EMS Research Agenda proposed the following: “Additional annual funding in an amount equal to 1% of the annual expenditure on EMS systems should be allocated for research into the effectiveness of those systems. This would mean approximately \$50 million would be available for research each year.” This has not been achieved nor has a source of funding been identified.

### *Workforce Planning and Development*

In general, a “big picture” concept of workforce planning, based on an understanding of workforce supply and demand, is largely absent from the EMS field. Workforce planning is not a common subject of EMS literature and the EMS Workforce Assessment revealed no systematic workforce planning approach in the EMS industry. Local agencies and systems, and some states, have attempted to address their workforce needs with little guidance on workforce planning, but express frustration due to the lack of workforce planning models or best practices. In particular, little information exists on strategies for the recruitment and retention of volunteers. The EMS Workforce Agenda called for a proactive, evidence-based approach to EMS workforce planning and development. To be effective, workforce planning and development will require access to current and accurate EMS workforce data.

The EMS Workforce Agenda envisioned that workforce planning would be understood and promoted by State EMS Offices. State EMS officials would use the broad principles of workforce planning to guide planning in their states. In cooperation with national workforce resources, states would disseminate educational programs, materials, guides, tools, and resources among EMS agencies to assist with local workforce planning.

Workforce planning has been used for decades within industry and business, and more recently has been widely used in government. The National Academy of Public Administration (NAPA), an organization chartered by Congress to improve government at all levels, outlined the importance of government workforce planning in a May 2000 white paper - *Building Successful Organizations: A Guide to Strategic Workforce Planning*. Many public and private organizations have developed their own workforce planning models. Aside from variations in terminology, the processes are similar. Most workforce planning models include factors such as:

- Current data on workforce supply (number of workers; number of students in pipeline) and demand (vacancy and turnover rates)
- Worker compensation, including pay, benefits, and other incentives
- “Environmental” factors, including:
  - Geographic factors and population demographics that impact need;

- Regulations;
- Numbers and types of other providers in the region.
- Economics and cost analysis, including budget considerations
- Evaluation of the workforce planning model to determine that organizational objectives are being met

## State EMS Office Overview

### Brief History

While the roots of emergency medicine go back hundreds of years to battlefronts in France and then the American Revolution, modern EMS in the U.S. has only been formalized since the 1960s. The National Research Council/National Academy of Sciences published a white paper in 1966 called, *“Accidental Death and Disability: the Neglected Disease of Modern Society,”* that tipped the current thinking to establish funded and organized systems of care. Between 1966 and 1981 there was considerable action taken and funding initiated under federal direction for the development of a comprehensive emergency medical system including most importantly, *Title XII of the Public Health Services Act*, and *The Emergency Medical Services Systems Act of 1973*. Both the federal government as well as independent philanthropic agencies provided hundreds of millions of dollars to enhance the research, understanding and development of EMS systems across the country. This funding ended with the Omnibus Budget Reconciliation Act of 1981 and the responsibility for EMS was shifted to the individual states.

### Regulatory Practices of State EMS Offices

State EMS Offices are typically agencies within the state health department, but may also be part of a multidisciplinary state public safety department, or independent state agencies. The 2011 National EMS Assessment found that 88% of State EMS Offices are positioned within a state department or a governmental entity. Within the hierarchy of state government, 72% are located two or three levels below the department head.

State EMS Offices balance a leadership role, promoting the growth and development of EMS, with a regulatory role, assuring that the state and its citizens receive quality service and patient care. This diverse and dynamic set of responsibilities is best outlined in the *Emergency Medical Services Agenda for the Future* document where 14 attributes are described that must be accomplished effectively in order for EMS to continue

#### *EMS Agenda for the Future,* 14 EMS attributes

- Integration of Health Services
- EMS Research
- Legislation and Regulation
- System Finance
- Human Resources
- Medical Direction
- Education Systems
- Public Education
- Prevention
- Public Access
- Communication Systems
- Clinical Care
- Information Systems
- Evaluation

to evolve (see chart right).<sup>25</sup> According to the EMS Assessment (page 138), regulatory functions make up more than 50% of the effort in 75% of states (37) and 24 states (48%) indicated that 70% or more of their efforts are directed towards regulatory functions. The majority of respondents to the National EMS Assessment identified those regulatory responsibilities for which the state EMS office holds definitive authority were: EMS data collection, EMS professional credentialing, EMS training standards, complaint investigation, and EMS professional education.

A survey was conducted in 2005 by the National Association of State Emergency Medical Services Officials (NASEMSO) to determine the “Organization, Staffing and Function of State and Territorial EMS Offices.”<sup>26</sup> The survey found that the number and duties of staff varied widely across states but found some commonalities in the following areas (percent of respondents reporting; in decreasing order of percentage):

- Personnel Training or Licensing (96.2%)
- Data and Information Systems (90.5%)
- Ambulance Service or Vehicle Inspection or Licensing (81.1%)
- Trauma or Other Special Facility Designation (69.8%)
- Investigation (66%)
- Emergency Medical Services for Children Programs (64.1%)
- Physician Medical Direction (62.2%)
- Domestic Preparedness or WMD Coordination (50.9%)
- Injury or Other Prevention Programs (39.6%)
- Communications and Dispatch Systems (35.8%)
- Public Information/Media Relations (28.3%)
- Rule Writing (28.3%)
- Grant Writing (24.5%)
- Legal Research and Intervention (22.6%)
- Critical Incident Stress Management Coordination (15%)
- Research (11.3%)

The role of state office as it relates to data generally is the responsibility for the acquisition and summation of data from the EMS agencies within the state. State EMS Offices use these data to identify and drive improvements as well as the implementation of guidelines. The extent of data available to most State EMS Offices is far greater and more detailed to the EMS workforce demand and supply issues than what is available through federal partners such as the Bureau of Labor Statistics. While

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<sup>25</sup> National Highway Traffic Safety Administration, *Emergency Medical Services Agenda for the Future* (1996), On the Internet at <http://www.nhtsa.gov/people/injury/ems/agenda/emsman.html> (Accessed May 28, 2013)

<sup>26</sup> Hise, S. National Association of State Emergency Medical Services Officials (NASEMSO), *The Organization, Staffing and Function of State and Territorial EMS Offices*. 2005. On the Internet at <http://www.nasemso.org/Resources/Monographs/documents/Staffing-OfcFunctionMonograph12-2005.pdf> (Accessed August 1, 2012)

the gathering of this data will take hard work by the State EMS Offices, the relevance and importance of this information will prove to be invaluable.

### EMS Data Collection Issues

The heart of the issues outlined in this document originates with data collection and final directions are planned based on the analysis of this data. While State EMS agencies have the exclusive authority to mandate the collection and submission of data by local EMS agencies, the incorporation of any mandate requires the additional burden of policing its enforcement. It is the hope of the Core 10 Guidelines effort that State EMS Offices would consider adding EMS workforce data collection processes to existing processes in the hopes of lessening the burden of this additional responsibility.

*Note: Suggestion to incorporate data submission requirements into existing processes like the state agency licensure requirements for local EMS providers.*

For all the programs and efforts at quantifying the healthcare workforce, there exist a number of barriers to accurate data collection throughout the EMS profession. Levine and Chapman found there is no uniform EMS data collection among the states.<sup>27</sup> For example, the contemporary count of “credentialed EMS providers” results in an incomplete assessment of the national workforce because:<sup>28</sup>

- Credentialed does not mean ‘one Full-Time Equivalent (FTE) provider of EMS services’
- Credentialed does not mean employed
- Can be credentialed in more than one state
- Many EMS workers have more than one EMS job
- In 18 states, a majority work for more than one agency

*Note: Traditional FTE calculations are based on 2080 hours of work spread over 40 hours per week for 51 weeks. This calculation has obvious limitations due to the 24/7 operations of EMS systems.*

One cannot overlook the importance of considering the unique characteristics of the volunteer workforce such as satisfaction, reasons for entering and leaving the profession, greater prevalence in rural areas, and licensure levels represented by the group.<sup>29</sup>

Further complicating the matter is the lack of a standard, or even consistent, definition of volunteerism from state to state. The 2011 National EMS Assessment recommended

<sup>27</sup> United States. Health Resources and Services Administration (HRSA), *Emergency Medical Services in Frontier Areas: Volunteer Community Organizations*, 2006, on the Internet at <ftp://ftp.hrsa.gov/ruralhealth/FrontierEMS.pdf> (Accessed March 26, 2013)

<sup>28</sup> Ibid

<sup>29</sup> Halpern, M., *Adequacy of the Supply and Factors Influencing Potential Shortages Among Emergency Medical Technicians and Emergency Medicine Physicians*, 2010: n. page. Print. On Internet at [http://sites.duke.edu/ihss/files/2011/12/Halpern\\_ResearchBrief.pdf](http://sites.duke.edu/ihss/files/2011/12/Halpern_ResearchBrief.pdf)

the development of a formal definition of volunteerism to allow state data to be more accurately aggregated and analyzed at the national level. This is an issue that has been identified in federal and international reports since at least 2006.<sup>30,31</sup> A considerable stride was taken to identify and publish “The National EMS Workforce Data Definitions,” which are a significant element of the Core Ten Guidelines. *The National EMS Workforce Data Definitions* includes a data element for “Personnel’s Service Status” and this data elements definition states that “[v]olunteers are licensed EMS workers who receive nominal or no compensation for their provision of EMS services at the agency.”<sup>32</sup>

States have different criteria for classifying paid and volunteer work; a “volunteer” in one state may be classified as “paid” in another. For example, in Sheridan County, Kansas, EMS personnel are considered to be volunteers; however, information posted by the Kansas EMS Board lists four paid workers for Sheridan County. The “volunteers” cover 350-400 hours of call time per month for which they are paid \$1.10 per hour. By this state's standard, that qualifies as “paid,” although the compensation would not be considered a primary wage. Virginia is another example of a state that is aggressively addressing this issue by establishing a workforce development committee under its state EMS advisory board.

Identifying issues and limitations is much easier than developing definitions and consensus documents for widespread use. The *EMS Workforce for the 21st Century: A National Assessment* concluded that the data currently available to estimate the supply and demand for EMTs and paramedics were insufficient for national EMS workforce planning. Improved data collection is essential to laying a solid foundation for the future sustainability of the EMS workforce in the United States. As a first step in improving the quality of EMS workforce data nationally, NHTSA’s Office of Emergency Medical Services began funding an effort by the American Institutes for Research to develop uniform national EMS workforce data definitions in 2009 and was completed during the writing of these guidelines.<sup>33</sup>

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<sup>30</sup> Ibid, HRSA *Emergency Medical Services in Frontier Areas: Volunteer Community Organizations*

<sup>31</sup> World Health Organization, *The world health report 2006: working together for health*, 2006. On the Internet at [http://www.who.int/whr/2006/whr06\\_en.pdf](http://www.who.int/whr/2006/whr06_en.pdf) (Accessed August 16, 2012)

<sup>32</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013) <http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>

<sup>33</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013) <http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>



## State Workforce Agencies

The Workforce Investment Act of 1998 (WIA) and the appropriations extending its authority provide almost \$8 billion to states each year (2011 \$7.9 billion). These funds are to be used under each governor's authority and responsibility to improve workforce training, counseling and general support services. These services are typically referred

*Note: A listing of State Workforce Agencies can be found at: <http://us.jobs/state-workforce-agencies.asp>*

to as a "State Workforce Agency" and all states have member agencies that are funded from revenues collected under the Federal Unemployment Tax Act (FUTA). FUTA provides funding to state member agencies for unemployment insurance, employment service and labor market information. State Workforce

Agencies are typically part of state government and commonly in departments of labor with reporting responsibilities back to the governor's office.

When state governors accept these funds, they also accept the following responsibilities:

- Developing state plans including a five-year strategic plan that goes back to the federal Department of Labor (DOL);
- Developing and continuously improving the statewide system, including assuring coordination and non-duplication among programs and activities and local plans;
- Designating local areas;
- Developing allocation formulas for distributing funds to local areas for adult and youth activities;
- Developing and continuously improving state performance measures, including adjusted levels of performance, to assess the effectiveness of activities in states;
- Preparing annual reports for the U.S. Secretary of Labor;
- Developing the statewide employment statistics system; and
- Developing an application for incentive grants.

### Appropriations under WIA, FY 2011 *(Dollars in Millions)*<sup>34</sup>

Program	Total Amount	Estimated Local Share	Estimated State Share
Workforce Investment Act: Adult Grants	\$770	\$731	\$39
Workforce Investment Act: Dislocated Worker Grants (Twenty percent of funds or \$223 million are reserved for National Emergency Grants (NEG) from the Secretary of Labor <i>(includes NEG reserve)</i> )	\$1,062 + \$223 NEG	\$743	\$319
Workforce Investment Act: Youth Grants	\$826	\$784	\$42
Employment Service Grants	\$704	\$631	\$71
Veterans' Employment and Training Service – State Administration	\$165	\$0	\$165
Unemployment Insurance State Operations	\$3,179	\$0	\$3,179
Trade Adjustment Assistance	\$721	\$0	\$721
Bureau of Labor Statistics Employment and Unemployment Statistics (General Funds)	\$211	\$0	\$211
Bureau of Labor Statistics/Labor Market Information (Unemployment Trust Funds)	\$67	\$0	\$67
<b>TOTAL <i>(includes NEG reserve)</i></b>	<b>\$7,926</b>	<b>\$2,889</b>	<b>\$4,814</b>

There is tremendous variation in the structure and names of State Workforce Agencies from state to state. The best resource to find out the designated State Workforce Agency in your state is the National Association of State Workforce Agencies (NASWA) found online at [www.naswa.org](http://www.naswa.org).

While the State Workforce Agencies are responsible for ensuring that the fiscal, administrative, and programmatic functions are completed, governors also appoint an advisory State Workforce Investment Board in order to obtain input from the business community and assist in achieving all the responsibilities outlined above. All of what is described above is the core of what is commonly referred to as the “workforce investment system.”

#### Local One-Stop Career Centers

The WIA standards mandate that resources are accessible and community-specific related to locally available jobs. Standards also outline the related skill requirements, and provide feedback on the performance of any local job-training provider. The resource dedicated to provide this service is referred to as a “One-Stop Career Center”

<sup>34</sup> National Association of State Workforce Agencies (NASWA), *2011 NASWA Annual Report*, 2012, pg 45, <http://www.naswa.org/assets/utilities/serve.cfm?gid=2e7aab0b-a5ff-4697-982a-ea8633f5ea74>

and its primary function beyond engaging the public is to integrate programs, services and governance structures.

Local communities are given flexibility to design and implement their One-Stop Centers as they see fit as long as they meet several key responsibilities. First of all they must have Local Workforce Investment Boards (LWIBs) that plan and oversee One-Stop Career Centers. These boards must be made up of the following groups named, “One-Stop Partners:”

- WIA Adult, Dislocated Worker, and Youth Activities;
- Employment Service;
- Adult Education;
- Postsecondary Vocational Education;
- Vocational Rehabilitation;
- Title V of the Older Americans Act;
- Trade Adjustment Assistance;
- Veterans Employment and Training Programs;
- Community Services Block Grant;
- Employment and training activities carried out by the U.S. Department of Housing and Urban Development; and
- Unemployment Insurance

Typically a, “One-Stop operator” will be designated to manage the day-to-day functioning of the local One-Stop Career Center. Organizations such as postsecondary educational institutions, local employment service offices, community-based organizations, private for-profit entities, or government agencies are all eligible to be designated or certified as One-Stop operators. The primary requirement is that there is one “full-service” center where individuals can get access to resources from each of the partners either at a physical site or electronically.

*Note: More information about your local One-Stop Career Centers can be found online at:*  
<http://www.servicelocator.org/onestopcenters.asp>

### ***Levels of Service Provided***

These One-Stop operators must be able to provide three levels of service that include but are not limited to the respective sub-points:

- 1) Core Services (include but not limited to):
  - a. Determination of eligibility;
  - b. Initial assessment;
  - c. Job search and placement assistance and career counseling;

- d. Labor market information (job openings and trends);
  - e. Information on eligible training providers;
  - f. Follow-up service.
- 2) Intensive Services (include but not limited to):
- a. Comprehensive and specialized assessments of skill levels (i.e., diagnostic testing);
  - b. Development of an individual employment plan;
  - c. Group counseling;
  - d. Individual counseling and career planning;
  - e. Case management; and
  - f. Short-term pre-vocational services.
- 3) Training Services
- a. Provided through the use of Individual Training Accounts (ITAs).
  - b. ITAs are typically voucher, credit, debit card, or even a repository for training funds from other programs

### *Youth Programs*

There is a special program targeting young people aged 14-21 who qualify as low income and meet at least one of the six specified barriers to employment:

- Basic skills deficient;
- A school dropout;
- Homeless, a runaway, or a foster child;
- Pregnant or a parent;
- An offender; or
- An individual who requires additional assistance to complete an educational program, or to secure and hold employment.

“Youth Councils” are established to oversee the development of the local plan relating to youth, recommend the providers of youth activities to be awarded grants by the local board, conduct oversight of these providers, and coordinate youth activities in the local area. The activities of the Youth Council are typically more intensive and longer-term with an emphasis adult mentoring for not less than one year, and follow up services for not less than one year after the completion of participation.

### **Workforce Data Collection, Planning & Development Resources**

In 2010 the Patient Protection and Affordable Care Act (PPACA) was passed, ushering in waves of change to our nation’s healthcare system. Concerns regarding the current and future shortages of providers (nurses, primary care physicians, geriatricians, dentists

and many allied health professions) were targeted in the PPACA with the creation of the National Health Care Workforce Commission (NHCWC). The goals of the NHCWC are to build the scientific basis necessary to answer with more certainty some of the workforce questions regarding: regional health-care inequities; access issues commonly found in rural areas; and the gaps of health-care services. Armed with this information they hope to develop needed resources for an integrated government strategy responsive to health-care needs locally and nationally. This commission was given several high priority areas such as EMS workforce capacity at all levels, including the retention and recruitment of the volunteer workforce.<sup>35</sup>

PPACA also authorized a National Center for Workforce Analysis (National Center), as well as state and regional workforce centers, and provides funding for workforce data collection and studies. Ed Salsberg, Director of the National Center, said: "One of our priorities is to encourage different health occupations and professions across the nation to use the minimum data set guidelines when they collect workforce-related data. There is going to be a need for guidance and support for states and others on how to collect and analyze the data in a standard manner."<sup>36</sup>

Several Health Workforce Research Centers (HWRCs) across the country conduct various studies, surveys and analyses of the healthcare professions. The purpose of these centers is to, "increase the amount of high quality, impartial, policy-relevant research on the health workforce available to assist decision-makers at the federal, state and local levels to better understand health workforce needs and to help ensure access to high quality efficient healthcare."<sup>37</sup> These HWRCs are often funded by private foundations or under contract with federal, state or private entities. They produce numerous publications, including those in peer-reviewed medical and healthcare journals.

Many non-governmental organizations (NGOs), non-profit or other organizations that sub-contract duties and work for government agencies also attempt to change policy by publication and through advocacy of issues.<sup>38</sup> The reports of these professional associations may be perceived as narrowly focused and their results may be more applicable to their membership than to the whole profession. The work of independent

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<sup>35</sup> United States. House of Representatives. H. R. 3590—474. 2010. Web.  
[http://www.gao.gov/about/hcac/nwcsec5101\\_hr\\_3590.pdf](http://www.gao.gov/about/hcac/nwcsec5101_hr_3590.pdf)

<sup>36</sup> Salsberg, Ed. Interview. Feb 2011. <http://www.hwic.org/news/feb11/salsberg.php>

<sup>37</sup> HRSA Posting, Grants.Gov website as of January 2013:  
<http://www.grants.gov/search/search.do?mode=VIEW&oppld=208154>

<sup>38</sup> Dower, C., Kaiser, J. "Collecting Health Workforce Data in California." San Francisco: Center for the Health Professions, University of California, San Francisco, 2008. Print.  
[http://futurehealth.ucsf.edu/Content/29/2008-09\\_Collecting\\_Health\\_Workforce\\_Data\\_in\\_California.pdf](http://futurehealth.ucsf.edu/Content/29/2008-09_Collecting_Health_Workforce_Data_in_California.pdf)

research centers can suffer from alignment with often-changing interests of funding organizations and lack of standards across projects due to shifting funders, different questions for each project, and different amounts of funding leading to discrepancies in the depth of research conducted.

### California's Health Workforce Clearinghouse

The state of California provides an example of how the development of needed resources can come from an integrated government strategy responsive to health-care needs locally and nationally. The regulatory and professional bodies that represent and oversee California's 30-plus regulated health professions all collect information about their licensees, primarily through an individual's application to be admitted to the profession. The concern was that the information collected may be limited and was difficult to update regularly. This challenge was increased when trying to gather volunteer data in EMS including total counts of licenses and distinguishing between full-time, part-time and retired professionals.

In 2007, legislation was passed to establish a Health Workforce Clearinghouse (<http://www.oshpd.ca.gov/hwdd/hwc/>) in California. The intent of this clearinghouse is to be utilized by the Office of Statewide Health Planning and Development (OSHPD) and provides an opportunity to use data collected to make informed policy decisions. This is an example of innovative problem solving by a state to address the need for consistent and accurate healthcare workforce data.

### Health Workforce Information Center

One of the best examples of available workforce resources available through an NGO is the Health Workforce Information Center (HWIC). The HWIC has a focus on rural healthcare workforce but is not exclusively limited to rural. Gain free access to its recent information and resources through its website (<http://www.hwic.org/>). The Center for Rural Health at the University of North Dakota School of Medicine and Health Sciences provides the support for the resource, and funding comes from the HRSA Bureau of Health Professions within the U.S. Department of Health and Human Services.

HWIC provides an online library to assist in finding out information about

- Health workforce programs and funding sources
- Workforce data, research and policy
- Educational opportunities and models
- News and events.

## Bridging the Gap

In a 2008 study, Drs. Victoria Freeman, Daniel Patterson and Rebecca Slifkin sought to understand the challenges of maintaining an adequate and professional workforce in both urban and rural services.<sup>39</sup> They surveyed a total of 1,425 local EMS directors and found that staffing issues were common among the vast majority of respondents. 50% of the agencies in urban environments were fully staffed and only 43% of rural respondent EMS directors reported being fully staffed. Retention was identified as a significant contributing factor to the staffing issues with 55% identifying turnover as a problem. This problem was even greater in rural areas with directors much more likely to report retention as a key workforce issue.

In their 2010 report, Drs. Daniel Patterson, Cheryl Jones and Michael Hubble, et al. published their investigation into the costs associated with turnover in EMS.<sup>40</sup> This group sought to quantify the mean annual rate of turnover, the total median cost of turnover and the median cost per termination across a diverse sample of EMS agencies. Using the established Nursing Turnover Cost Calculation Methodology (NTCCM) it was determined that the weighted mean annual cost of turnover per agency was more than \$71,613 with an overall weighted mean annual rate of turnover of 10.7%. The cost per termination was \$6,871.51.

These two studies are critical not only for the information they provide but also because they are groundbreaking studies in EMS workforce issues. They established rates and figures based upon scientific evidence, using survey and/or retrospective analysis to understand issues fundamental to the establishment of these guidelines. While progress has been made in states like California, Kansas, Virginia and others, there is a great need to gather baseline data and be able to incorporate the information into strategic workforce planning. These Core 10 Guidelines have been established for that very purpose. This work must be undertaken to reduce the endless burdens of staffing issues, turnover and their associated costs.

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<sup>39</sup> Freeman, Victoria A; Patterson, Daniel B.; Slifkin, Rebecca T.; North Carolina Rural Health Research & Policy Analysis Center, with funding from the Rural Health Research & Policy Centers, *Issues in Staffing Emergency Medical Services: A National Survey of Local Rural and Urban EMS Directors*. May, 2008, Final Report No. 93

<sup>40</sup> Patterson, Daniel P.; Jones Cheryl B.; Hubble, Michael W.; et al; Prehospital Emergency Care, *The Longitudinal Study of Turnover and the Cost of Turnover in Emergency Medical Services*, April 6, 2010, article available through Informa Healthcare, <http://informahealthcare.com/doi/abs/10.3109/10903120903564514>

## Guidelines for State EMS Office Implementation

The purpose of the EMS Workforce Guidelines is to provide recommendations and strategies to help states begin to systematically address EMS workforce needs under the leadership of the State EMS Office, utilizing a collaborative, multiagency approach to begin to systematically address EMS workforce needs. While there are many potential areas of focus, these are considered the core and are organized into four categories as outlined in the EMS Workforce Agenda.

- Health, Safety and Wellness
- Education and Certification
- Data and Research
- Workforce Planning and Development

The EMS Workforce Assessment clearly states that the EMS profession does not have the data and research necessary to address EMS workforce issues. Decisions made without data are simply guesses. The first guideline is focused on gathering necessary data and draws from *The National EMS Workforce Data Definitions* project. As presented, this first data-driven effort is essential for completing other guidelines.

The guidelines immediately following urge State EMS Offices to broaden their work with local EMS agencies and enlist the help of State Workforce Agencies. While some states may be advanced in these areas, it is the intention of these guidelines to help states establish a common baseline of understanding. If these relationships don't already exist around the mutual goal of collecting the necessary data for workforce planning, then all are encouraged to focus their efforts there to start.

*Note: State EMS Offices should collect all of the data elements of the Core 10 Guidelines. However, if this is not attainable then states are encouraged to collect what they can and move forward instead of doing nothing at all.*

The remaining guidelines are written to help states utilize the data gathered or to address other workforce needs like education and safety. All states that choose to participate in this effort are encouraged to share their work, data and progress with other states. As a collective effort, sharing between states of data and lessons learned will promote consistent work and powerful results. States are encouraged to share best practices and support each other in this effort.

All emergency medical services, whether fire-based or stand alone, rural or urban, paid or volunteer, are an integral part of our nation's safety net. Providing essential elements of public safety, public health and healthcare, EMS is one of the most unique and misunderstood professions. The future of this profession will be determined by the availability, capability and stability of our EMS workforce in all settings. These guidelines



are a fundamental step toward improving our understanding and direction of workforce planning and development.

The *National EMS Workforce Data Definitions* includes definitions for EMS Practice Level, State EMS Licensure Level and National Registry Certification Level. These three definitions include: Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician – Intermediate, Advanced Emergency Medical Technician, and Paramedic as “Allowed Responses”.<sup>41</sup>

This document utilizes the more contemporary levels as published in the *National EMS Scope of Practice Model*: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT) and Paramedic.<sup>42</sup> As such, the Emergency Medical Technician – Intermediate (EMT-I) is not listed in any methodology language or calculations. States that have one or more levels of licensure in between the levels of EMT and paramedic other than the AEMT are encouraged to use *The National EMS Workforce Data Definitions*.

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<sup>41</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013)

<http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>

<sup>42</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2007). National EMS Scope of Practice Model. (No. DOT HS 810 657) Washington, DC: (Accessed July 31, 2013)

<http://www.ems.gov/education/EMSScope.pdf>

## Guideline 1

## Data &amp; Research

*Acquire Essential Workforce Data*

Collect a core set of workforce data elements to address workforce assessment, planning and policy issues.

**Background:**

The lack of high-quality, comparable data in modern EMS is commonly cited as a significant and critical limitation in our profession. *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment* concluded that the data currently available to address the future demand for and supply of EMS workers in the nation are insufficient for national EMS workforce planning.<sup>43</sup> While data gathering efforts are underway and beginning to bear fruit, there has not historically been a single source that contains consistently defined data elements for EMS workforce data. The development of policies concerning the key issues that drive the EMS workforce (the education pipeline, retention, pay and benefits, etc.) is completely dependent upon having consistent and comparable data.

Some data that can be utilized for EMS workforce planning is currently available from a variety of sources. The collection of workforce data elements by the EMS community should be coordinated with these agencies, such as the Bureau of Labor Statistics, the National Center for Education Statistics (NCES), and other State Workforce Agencies. Coordination with these agencies will improve the availability of workforce data at the national level and promote the creation of evidence-based analyses and workforce policies essential to effective EMS workforce planning.

The definitions for the data elements to be collected in this first guideline are pulled directly from *The National EMS Workforce Data Definitions* project.<sup>44</sup> This project was initiated in 2009 with input and support from leading workforce experts with the goal of identifying essential data elements required for effective assessment of the EMS workforce. *The National EMS Workforce Data Definitions* document is organized into two sections: workforce variables whose reporting and collection is *essential* for workforce planning at both national and local levels; and workforce data elements whose collection is *desirable* but not essential for workforce planning and reporting.<sup>45</sup>

Guideline 1 encourages each state to collect all the essential data elements and some key elements from the desirable list. All data elements requested from the desirable list are used in calculations within this document and the full list of essential data elements

<sup>43</sup> Ibid, NHTSA, *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment*

<sup>44</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013) <http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>

<sup>45</sup> Ibid

should be considered the necessary baseline for all EMS workforce planning and development.

**Rationale:**

The collection of high-quality EMS workforce data is required in order for local, state, and national EMS organizations to ensure effective EMS workforce planning and development. In order to collect these data, stakeholders must increase their awareness of the need for comparable EMS workforce data and participate in the collection of defined workforce data elements. Widespread implementation of this guideline is critical to the development of evidence-based workforce policies and planning that will be used to prepare the EMS workforce for future demands.

**Considerations:**

- Coordinate with key stakeholders including but not limited to educational institutions, state workforce planning experts and local EMS provider agencies and educate them about the importance of gathering this data. (See Guidelines 2 and 3 respectively)
- Identify existing data sources from which to draw this data:
  - State licensure database (both EMS personnel and agency)
  - State demographic data as a result of using National EMS Information System (NEMSIS) compliant datasets
  - The National Registry of Emergency Medical Technicians
  - US Bureau of Labor Statistics
  - Academic institution reports / state educational database
  - Local agency surveys
  - Others
- Incorporate certain data elements in licensure, renewal or agency inspection forms
- To maintain consistency, collect the data elements as they are defined and avoid variation
  - Data elements collected from additional sources should be consistent with *The National EMS Workforce Data Definitions*<sup>46</sup>
- Share data analyses and comparison with key stakeholders specifically including State Workforce Agencies and local EMS agencies
  - Dissemination of this information could occur through the creation of:
    - Publications / white papers

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<sup>46</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013) <http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>

- Workforce newsletters
- Online reports
- Meetings and presentations

### Data Needs:

*The National EMS Workforce Data Definitions* document identifies *essential* and *desirable* data. These sections are each broken down into four primary categories: Employment at Agency; Individual Characteristics; EMS Education Program Characteristics; and Agency Characteristics. The data required for Guideline 1 includes all of the data outlined as essential data elements as well as several additional elements from desirable list.\* The list below summarizes all the data points needed:<sup>47</sup>

- 1) **Employment at Agency** - Individual Employment Level Data (by level)
  - a. **Personnel service status** (Full-Time Paid Employee, Part-Time Paid Employee, Volunteer) [1.1.E]
  - b. **Service status date (date)** [1.6.D] **EMS practice level** (None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic) [1.2.E]
  - c. **Primary EMS job responsibilities** (Educator/Preceptor, Administrator/manager, First-line Supervisor, Patient Care Provider, Other) [1.3.E]
  - d. **Current staff member** (Yes, No, Don't know) [1.4.E]
  - e. **Other Job Responsibilities** (Educator/Preceptor: Yes, No. Patient Care Provider: Yes, No Law Enforcement (Police): Yes, No. Fire Suppression: Yes, No. First-line Supervisor: Yes, No) [1.5.E]
  - f. **Hours on-duty in past 4 weeks (Number)** [1.7.D]
  - g. **Hours on-call in past 4 weeks (Number)** [1.8.D]
  - h. **Total length of EMS service at agency (Number)** [1.9.D]
  
- 2) **Individual Characteristics**
  - a. **State EMS licensure level** (None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic) [2.1.E]

*\*Note: The National EMS Workforce Data Definitions document divides the data elements are divided into "essential" and "desirable", and are listed by number along with an "E" or "D" respectively. ALL data points identified left (Guideline 1) are needed to fully complete the Core 10 Guidelines.*

*If you cannot acquire all the elements, collect what is available but work toward the goal of acquiring all data points listed in Guideline 1.*

<sup>47</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration (2013). National EMS Workforce Data Definitions (No. DTNH22-080F-00122) Washington, DC: (Accessed April 30, 2013) <http://www.nhtsa.gov/staticfiles/nti/pdf/811720.pdf>

- b. **State licensure date** (Initial Date) [2.2.E]
- c. **State EMS licensure end date** (Date) [2.3.E]
- d. **National Registry certification level** (None, Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic) [2.4.E]
- e. **National Registry certification date** (Date) [2.5.E]
- f. **Date of birth** (Date) [2.6.E]
- g. **Sex** (Male, Female) [2.7.E]
- h. **Ethnicity** (Hispanic, Latino, or Spanish origin, not of Hispanic, Latino, or Spanish origin) [2.8.E]
- i. **Race** (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White) [2.9.E]
- j. **Primary affiliation** (Agency name) [2.10.E]
- k. **Date of agency affiliation** (Date) [2.27.D]
- l. **Secondary affiliation** (Name of agencies) [2.11.D]
- m. **Date of agency affiliation** - delineate for each secondary affiliation (Date) [2.27.D]

### 3) EMS Education Program Characteristics

- a. **Education program accreditation/approval, by level** (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic) [3.1.E]
- b. **Education program completers, by level** (Emergency Medical Responder: \_\_\_#\_\_\_ Emergency Medical Technician: \_\_\_#\_\_\_ Emergency Medical Technician - Intermediate: \_\_\_#\_\_\_ Advanced Emergency Medical Technician: \_\_\_#\_\_\_ Paramedic: \_\_\_#\_\_\_) [3.2.E]
- c. **Enrollment, by level** (Emergency Medical Responder: \_\_\_#\_\_\_ Emergency Medical Technician: \_\_\_#\_\_\_ Emergency Medical Technician - Intermediate: \_\_\_#\_\_\_ Advanced Emergency Medical Technician: \_\_\_#\_\_\_ Paramedic: \_\_\_#\_\_\_) [3.5.D]
- d. **Education Program Certified Graduates, by level** (Emergency Medical Responder: \_\_\_#\_\_\_ Emergency Medical Technician: \_\_\_#\_\_\_ Emergency Medical Technician - Intermediate: \_\_\_#\_\_\_ Advanced Emergency Medical Technician: \_\_\_#\_\_\_ Paramedic: \_\_\_#\_\_\_) [3.6.D]

### 4) Agency Characteristics

- a. **EMS organization type** (Hospital; Fire Department; Government, Non-Fire Department; Tribal; Private) [4.1.E]
- b. **EMS organization tax status** (For-profit, Not-for-profit, Neither (Government)) [4.2.E]
- c. **Primary type of service** (911 Response with transport capability, 911 response without transport capability, Air Medical, Hazmat, Medical

Transport (Convalescent), Paramedic Intercept, Rescue, Specialty Care Transport) [4.3.E]

- d. **Other types of services provided** (911 Response with transport capability: Yes/No; 911 response without transport capability: Yes/No; Air Medical: Yes/No; Hazmat: Yes/No; Medical Transport (Convalescent): Yes/No; Paramedic Intercept: Yes/No; Rescue: Yes/No; Specialty Care Transport: Yes/No; None: Yes/No) [4.4.E]
- e. **Levels of service** (Emergency Medical Responder, Emergency Medical Technician, Emergency Medical Technician - Intermediate, Advanced Emergency Medical Technician, and Paramedic) [4.5.E]
- f. **Organization status** (Volunteer; Non-volunteer; Combination (both volunteer and non-volunteer) [4.6.E]
- g. **Typical staffing configuration for 911 Ambulance** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #   Other (SPECIFY \_\_\_\_\_):   #  ) [4.7.E]
- h. **Typical staffing configuration for 911 Non-Ambulance Response** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #   Other (SPECIFY \_\_\_\_\_):   #  ) [4.8.E]
- i. **Typical staffing configuration for Scheduled Patient Transport** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #   Other (SPECIFY \_\_\_\_\_):   #  ) [4.9.E]
- j. **Service area by zip codes** (5 digit (zip codes) followed by percentage (rounded to nearest integer) [4.10.E]
- k. **Agency New Hires** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #  ) [4.11.E]
- l. **Agency Leavers** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #  ) [4.12.E]
- m. **Agency Current Staffing** (Emergency Medical Responder:   #   Emergency Medical Technician:   #   Emergency Medical Technician - Intermediate:   #   Advanced Emergency Medical Technician:   #   Paramedic:   #  ) [4.13.E]
- n. **Starting Salary** (Emergency Medical Responder: \$\_\_\_\_\_ per \_\_\_\_\_ Emergency Medical Technician: \$\_\_\_\_\_ per \_\_\_\_\_)

- \_\_\_\_\_ Emergency Medical Technician - Intermediate:  
 \$\_\_\_\_\_ per \_\_\_\_\_ Advanced Emergency Medical  
 Technician: \$\_\_\_\_\_ per \_\_\_\_\_ Paramedic: \$\_\_\_\_\_ per  
 \_\_\_\_\_) [4.14.E]
- o. **Starting Volunteer Compensation** (Emergency Medical Responder:  
 \$\_\_\_\_\_ per \_\_\_\_\_ Emergency Medical Technician:  
 \$\_\_\_\_\_ per \_\_\_\_\_ Emergency Medical Technician -  
 Intermediate: \$\_\_\_\_\_ per \_\_\_\_\_ Advanced Emergency  
 Medical Technician: \$\_\_\_\_\_ per \_\_\_\_\_ Paramedic:  
 \$\_\_\_\_\_ per \_\_\_\_\_) [4.15.E]
- p. **Benefits rate** (Emergency Medical Responder: \_\_\_\_\_% Emergency  
 Medical Technician: \_\_\_\_\_% Emergency Medical Technician -  
 Intermediate: \_\_\_\_\_% Advanced Emergency Medical Technician:  
 \_\_\_\_\_% Paramedic: \_\_\_\_\_%) [4.16.E]
- q. **Employee Benefits** (Paid leave: Yes/No; Retirement: Yes/No; Health  
 insurance: Yes/No; Other health benefits: Yes/No; Line of duty death and  
 injury benefits: Yes/No; Other insurance: Yes/No; Education benefits:  
 Yes/No) [4.17.E]
- r. **Volunteer Benefits** (Paid leave: Yes/No; Retirement: Yes/No; Health  
 insurance: Yes/No; Other health benefits: Yes/No; Line of duty death and  
 injury benefits: Yes/No; Other insurance: Yes/No; Education benefits:  
 Yes/No) [4.18.E]
- s. **Call Volume: Transports** (Number) [4.19.E]
- t. **Call Volume: 911 EMS responses** (Number) [4.20.E]
- u. **Call Volume: Advanced Life Support (ALS) responses** (Number) [4.21.E]
- v. **Call Volume: Basic Life Support (BLS) responses** (Number) [4.22.E]
- w. **Job Related Illness and Injury (time lost)** (Emergency Medical Responder:  
 \_\_\_\_\_ Emergency Medical Technician: \_\_\_\_\_ Emergency Medical  
 Technician - Intermediate: \_\_\_\_\_ Advanced Emergency Medical  
 Technician: \_\_\_\_\_ Paramedic: \_\_\_\_\_) [4.23.E]
- x. **Agency name** (Formal name of agency) [4.24.D]
- y. **EMS agency number** (Alphanumeric) [4.25.D]
- z. **Total 911 Emergency Service Area Size** (Number) [4.27.D]
- aa. **Total 911 Emergency Service Area Population** (Number) [4.28.D]
- bb. **Agency Anticipated Vacancies, by level** (Emergency Medical Responder:  
 \_\_\_\_\_ # \_\_\_\_\_ Emergency Medical Technician: \_\_\_\_\_ # \_\_\_\_\_ Emergency Medical  
 Technician - Intermediate: \_\_\_\_\_ # \_\_\_\_\_ Advanced Emergency Medical  
 Technician: \_\_\_\_\_ # \_\_\_\_\_ Paramedic: \_\_\_\_\_ # \_\_\_\_\_) [4.30.D]
- cc. **Overtime hours (paid), by level** (Emergency Medical Responder: \_\_\_\_\_ # \_\_\_\_\_  
 Emergency Medical Technician: \_\_\_\_\_ # \_\_\_\_\_ Emergency Medical Technician -  
 Intermediate: \_\_\_\_\_ # \_\_\_\_\_ Advanced Emergency Medical Technician: \_\_\_\_\_ # \_\_\_\_\_  
 Paramedic: \_\_\_\_\_ # \_\_\_\_\_) [4.31.D]
- dd. **Agency policy: Annual physical** (Required, Not required) [4.35.D]

*Note: It is possible that agency characteristics may be available from existing databases (e.g., NEMSIS demographics data set) or this data set could be included or even added to agency licensure renewal application.*

**Outcome:**

The acquired data is the basis for the future EMS workforce planning and development. Successful completion of this guideline will yield uniform data that is consistent and comparable, driving understanding of workforce supply, demand and need issues at the local, state and national levels. The collection of data is necessary to accurately measure the EMS workforce at all levels and develop effective EMS workforce policies. Data needs outlined above will be drawn upon in several of the remaining guidelines and should be adaptable to expand to meet the needs of between all EMS stakeholders and workforce planning partners.



## Guideline 2

Workforce Planning & Development *Engage Local EMS Agencies*

Local EMS agencies need support and guidance to be able to recruit and maintain a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, and safe.

**Background:**

Local EMS services throughout the country struggle to ensure adequate coverage for their service areas. Issues faced by local EMS agencies include EMS personnel shortages, challenges with recruitment and retention, and availability of quality training programs. The EMS Workforce Agenda states that an adequate EMS workforce is defined as the sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.<sup>48</sup>

Without state-level support and coordination, this task is almost insurmountable. Local data are very beneficial but only when used in context with other pertinent information and in line with common workforce planning and development practice. State EMS Offices have an opportunity to provide education and support on workforce planning and development practices, guide and enable local EMS agencies and assist data gathering from the local level.

Coordination is necessary in order for the State EMS Office to cultivate a robust body of EMS workforce data representative of all EMS agencies throughout the state. State EMS officials are encouraged to engage local agencies and promote the regular collection and reporting of data to the state. The results of this work will yield a current and accurate EMS workforce data set that can be used to facilitate effective, evidence-based state EMS workforce planning.

**Rationale:**

In order for the State EMS Offices to obtain the data needed for effective workforce planning and development, local agencies within the state must be engaged. Successful workforce planning is dependent upon the collection of current and accurate EMS workforce data; these data elements are outlined in Guideline 1. Without the contribution of data by local EMS agencies, the State EMS Office may not acquire a sufficient amount of data to enable effective workforce planning. The local EMS agencies will not be provided the support and guidance needed to be able to recruit and maintain an adequate workforce.

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<sup>48</sup> Ibid, NHTSA, *National EMS Workforce Agenda for the Future*

**Considerations:**

- Identify a group of leaders from local EMS agencies and other organizations that utilize or represent EMS personnel and request their help on designing approaches that will effectively engage all local EMS agencies
- Educate local EMS agencies about the importance and usefulness of gathering workforce data. Share the following:
  - EMS Workforce Guidelines (this document)
  - *The Emergency Medical Services Workforce Agenda for the Future*
  - *The EMS Workforce for the 21st Century: A National Assessment*
  - *The National Emergency Medical Services Workforce Data Definitions*
  - Other State workforce materials
- Outline benefits that will be provided to local EMS agencies for participating.
- Local EMS agencies may need tools and mechanisms that enable data gathering and reporting
  - Develop a simple survey to obtain needed data from individual EMS agencies
  - Identify issues to collecting essential data and work together to address issues
- To maintain consistency, collect the data elements as they are defined in Guideline 1 / Acquire Essential Workforce Data and try to avoid variation
  - Use of common data definitions (provided by *The National EMS Workforce Data Definitions*) is imperative to enable interoperability between data systems
- Data elements collected should reflect the daily operations of the agency where they originate
- Lack of funding is often a barrier, however data can be used to show operational and financial impact which may be used to decrease costs in the long-term
- Share data analyses and comparison with local agencies and other key stakeholders:
  - Dissemination of this information could occur through the creation of:
    - Publications / white papers
    - Workforce newsletters
    - Online reports
    - Meetings and presentations
  - Local agencies should be able to see and understand their issues in comparison to other local agencies as well as aggregate data at the state level

**Data Needs:**

*As outlined in Guideline 1*

**Outcome:**

Local EMS agencies will have and maintain a sufficient number of well educated, adequately prepared, and appropriately credentialed EMS workers who are valued, well compensated, healthy, and safe.<sup>49</sup> Data will be available at the local, regional and state levels to enable ample workforce planning and development efforts as outlined in these guidelines and beyond. This will only be achieved through the engagement of local EMS agencies and other organizations in the data collection process, along with the provision of education and support regarding how to effectively use this data for meaningful workforce planning and development. Providing this value back to the local EMS agencies will also help ensure that the data gathering will be sustained and improved over time.

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<sup>49</sup> Ibid, NHTSA, Emergency Medical Services Workforce Agenda for the Future

## Guideline 3

Workforce Planning & Development *Engage State Workforce Agencies*

The State Workforce Agency develops and maintains a statewide comprehensive system of services that prepares, supports, and enhances the economic health of the workforce.

**Background:**

State Workforce Agencies provide programs and services to job seekers, businesses, and workforce partners within their states to build a stronger workforce. State EMS Offices are encouraged to reach out to their State Workforce Agency and take advantage of available programs and guidance from the state workforce development board, access to economic development resources, and access to strategic plans and annual reports. The State Workforce Agency can provide tools and resources based on national templates for best practices, and guide the State EMS Office in the use of data, research, and workforce planning.

The data elements referenced in Guideline 1 are from *The National EMS Workforce Data Definitions* which were developed with input from EMS workforce experts and stakeholders. The collection of uniform EMS workforce data is not only valuable to support EMS system planning at the local and state levels, but also for the inclusion into statewide employment statistics systems maintained by the State Workforce Agency.

State Workforce Agencies are also incentivized under their current scope of work to incorporate EMS workforce data into state workforce strategic plans and annual reports to help ensure a comprehensive workforce assessment and plan for the state. With the promise of uniform EMS workforce data, the State EMS Office can be an effective and supportive stakeholder to the State Workforce Agency. Both have the mutual goal of facilitating effective, evidence-based workforce planning to build and strengthen the state workforce. This work can only be done through regional and local collaboration.

**Rationale:**

State Workforce Agencies are the State EMS Office's closest and most available state-level ally in the effort to improve the state EMS workforce. Collaboration between these two state offices allows each to benefit from the strengths and capabilities of the other. This partnership would improve the visibility of EMS workforce issues, provide the State Workforce Agency with a high quality source of data to produce state workforce analyses and reports, and potentially reveal funding opportunities that could meet EMS workforce needs.

**Considerations:**

- Every state has a State Workforce Agency
  - Listing of State Workforce Agencies can be accessed online at [www.naswa.org](http://www.naswa.org)

- Share this document and other EMS workforce efforts within the state with these agencies and their boards
- State Workforce Agencies possess significant expertise in workforce planning and development
- State Workforce Agencies produce state workforce analyses and reports that may currently not include EMS.
  - Their scope of work is to include all available workforce needs so a mutual partnership is possible
- Establish mechanisms to work together and share information (meetings, publications, educational opportunities, etc.)
- Long-term efforts are needed to establish EMS within the scope of state and national workforce planning and development

**Data Needs:**

*As outlined in Guideline 1*

**Outcome:**

Collaboration between the State EMS Office and the State Workforce Agency is essential to develop strategies and plans to address workforce issues specific to EMS that delineate rural, urban, paid and volunteer issues across the domains of supply, demand and need. The collaborative implementation of these strategies and plans will allow the State Office of EMS to fully utilize the expertise of the State Workforce Agency as well as any additional resources available. Both organizations can derive mutual benefit from a collaborative relationship that will enhance state EMS workforce planning and development.

## Guideline 4

## Education &amp; Certification

*Credential EMS Educators*

States should credential EMS educators based upon their ability to successfully prepare students for competency based testing and effective, safe performance in the industry.

**Background:**

According to the 2011 National EMS Assessment, a total of 29,339 EMS educators were reported by 48 states in the United States. However, in part due to inconsistent credentialing of EMS educators, the total number has never been fully determined at the national level. The 2002 National Guidelines for Educating EMS Instructors were developed in order to provide guidelines that teach future educators how to effectively teach adult learners who populate the EMS classroom. Credentialing EMS instructors will help ensure that EMS instructors are able to successfully prepare students for competency based testing.

According to the 2011 EMS Workforce Agenda for the Future, “EMS educators will be certified to ensure their graduates will possess the knowledge, competencies, and skills to provide high quality EMS care.”

**Rationale:** The quality of EMS education varies throughout the nation. EMS instructors are responsible for educating future EMS professionals. Credentialing EMS instructors will help ensure that they are capable and well trained.

**Considerations:**

- EMS educators should undergo a training class that emphasizes the DOT/NHTSA 2002 National guidelines for educating EMS Instructors.
- EMS educators should have experience as a paramedic or other related health care professional, formal preparation as an educator, including skills specific to teaching didactic, psychomotor, and affective objectives, and formal educational credentials from a nationally recognized program.

**Data Needs:**

As provided by states, EMS educational institutions and/or instructors.

**Outcome:**

An EMS instructor credentialing process “will evolve in the future and be part of a national instructor credentialing process and the envisioned national accreditation process. A national instructor credentialing process will help pave the way for reciprocal credentialing in other states.”<sup>50</sup>

<sup>50</sup> Ibid, *EMS Education Agenda for the Future*

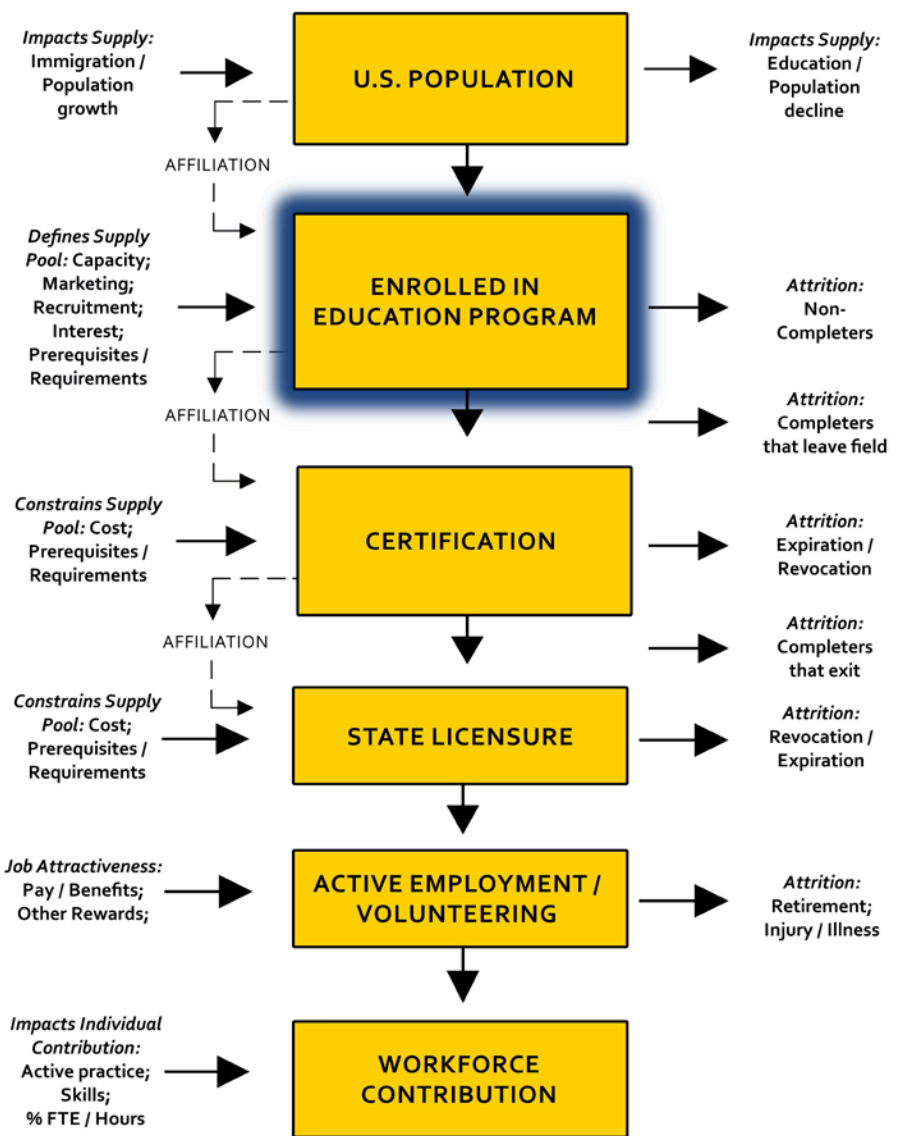
**Guideline 5**  
**Education & Certification**      *Obtain Educational and Institutional Data* (Workforce Supply)

States should be able to track the number of individuals at each interval of the education, certification, and licensure process for each personnel level.

**Background:**

States need to understand the amount of EMS workforce that is emerging as available in their state. This available workforce primarily comes through the established education system that exists in the state. Many states supplement educational institutions to provide education for EMTs and paramedics in order to meet the EMS workforce demands across the state. Understanding workforce supply, as described above, is fundamental for a State EMS Office to be able to gauge the value it is receiving for its investment in the educational system. The chart to the right is a diagram used in the EMS Workforce Agenda to outline the various elements that define the supply process for the EMS workforce. Data are needed in each of these areas in order to fully

**National EMT and Paramedic Workforce Supply**



understand EMS workforce supply and all its nuances. In this guideline, the highlighted boxes in the graphic and data regarding number enrolled, completing education, and

achieving state licensure will be the focus. This is a fundamental starting point to understanding how the state's EMS education system performs bringing new students into the various programs, how many students complete the course, become certified, and achieve state licensure. Armed with this data a State EMS Office can better determine the value it is receiving from the EMS education system, commonly referred to as the EMS "education pipeline".

Without this effort at the State EMS Office level, there is no other comprehensive source for data regarding the education pipeline. The AMA collects data from accredited paramedic programs, but does not collect data from EMT programs.<sup>51</sup> The lack of a central repository of data about students within the state EMS educational system hinders efforts to assess the future supply of workers.<sup>52</sup>

**Rationale:**

Execution of this guideline is necessary to implement Guidelines 6 and 7. By reporting the educational data from institutions that teach EMS programs to one centralized system, states can use the information from the educational data to evaluate workforce trends, especially the performance of the educational system and its contribution to workforce availability.

**Considerations:**

- States should collaborate with their educational providers to identify all institutions that provide EMS education.
- States should collaborate with state approved and nationally accredited institutions to report the educational statistics from their program to the National Center for Education Statistics.
- States should evaluate the educational data in order to assess the resulting number of successful certifications and licensures.

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<sup>51</sup> United States. National Highway Traffic Safety Administration (NHTSA) Office of Emergency Medical Services. *Emergency Medical Services Workforce Agenda for the Future*. 2011. Print.

[http://www.ems.gov/pdf/2011/EMS\\_Workforce\\_Agenda\\_052011.pdf](http://www.ems.gov/pdf/2011/EMS_Workforce_Agenda_052011.pdf)

<sup>52</sup> Maryland Institute for Emergency Medical Services Systems. 2005. Maryland EMS Workforce Report. Maryland Institute for Emergency Medical Services Systems, Baltimore, MD.

[http://www.miemss.org/home/LinkClick.aspx?fileticket=SGzpCZlhT\\_M%3d&tabid=58&mid=450](http://www.miemss.org/home/LinkClick.aspx?fileticket=SGzpCZlhT_M%3d&tabid=58&mid=450)



### Data Needs:

Data Element (from Guideline 1)	Data Definitions	Data Output
<b>Enrollment, by level</b> <b>[3.5.D]</b>	The number of students enrolled in the past 12 months, for each certification level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>Education program completers, by level</b> <b>[3.2.E]</b>	The number of students successfully completing program, in the past 12 months, for each certification level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>National Registry certification level</b> <b>[2.4.E]</b>	Level of most recent National Registry of Emergency Medical Technicians (NREMT) certification, by level (None, EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>State EMS licensure level</b> <b>[2.1.E]</b>	The highest EMS level at which an individual can legally perform EMS services in the state by level (None, EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>Primary affiliation</b> <b>[2.10.E]</b>	Agency for which individual spent the largest number of hours in a position that involved providing EMS services, in the past 30 days	Agency name

### Outcome:

The overall objective is to become more knowledgeable about EMS workforce supply issues by understanding the impact that the educational system has on supply. For example, if the State EMS Office and the EMS education system stakeholders understand that three out of four students do not complete EMS courses they start, then plans can be made to ensure that four times the number of students enter courses than are needed to meet EMS workforce requirements in the state. Having the information outlined in this guideline in one localized system, states will be able to compare and contrast factors that affect supply from one state to another and ultimately improve the alignment of the EMS educational system with the demands on the EMS workforce.

### Guideline 6

#### Education & Certification

#### Understand the EMS Educational Pipeline (Workforce Supply)

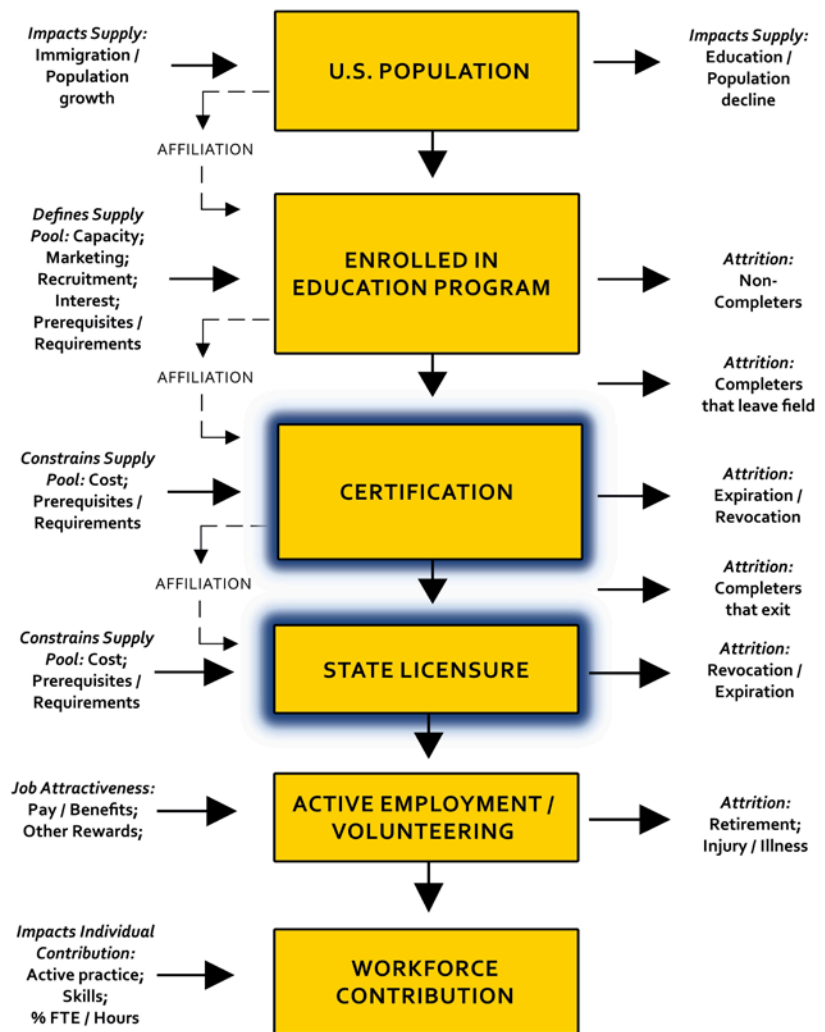
Utilize available information to analyze and address needs in the state EMS education system.

#### Background:

As discussed in Guideline 4, there is little to no consistency between states defining the number of qualified personnel who are eligible to sit for the state exam. *The Report on the Distribution of Health Professions Education Programs in Georgia* highlights a source of possible inaccuracies in Georgia state data as being caused by the private and public organizations enrolling and graduating EMS personnel but not reporting this data to the Department of Education Integrated Postsecondary Education Data System.<sup>53</sup> According to the EMS Workforce Agenda for the Future “The lack of complete data about students in the EMS educational pipeline hinders efforts to assess the future supply of workers”<sup>54</sup>

An additional important consideration is the efficiency of the education pipeline in

#### National EMT and Paramedic Workforce Supply



<sup>53</sup> University of Georgia Center for Health Workforce Planning and Analysis. 2010. Report on distribution of health professions education programs in Georgia. Accessed February 2<sup>nd</sup> 2013. [http://www.usg.edu/health\\_workforce\\_center/documents/FINAL\\_COPY\\_HC\\_Georgia\\_GIS\\_Mapping\\_Project\\_Report.pdf](http://www.usg.edu/health_workforce_center/documents/FINAL_COPY_HC_Georgia_GIS_Mapping_Project_Report.pdf)

<sup>54</sup> Ibid, NHTSA, *Emergency Medical Services Workforce Agenda for the Future*

producing EMS personnel who become licensed in the state. By analyzing data collected from EMS education institutions the state will be able to identify and address problems that may be affecting the numbers of students getting licenses. These trends can be discussed with partners in the EMS education system to develop strategies for continued success or quality improvement.

Both methodologies produce rates that can be compared to other states in order to understand national trends in matriculation rates and highlight best practices or areas that are in need of quality improvement.

It is important to gauge how many students complete the EMS educational program, pass a national certification examination, and obtain a license from the state.

**Rationale:**

The numbers of EMS personnel who are enrolled within the EMS education system or who complete training from an accredited or sanctioned EMS education institution have a direct impact on the supply, demand, and need of the EMS workforce within the state. Using data gathered in Guideline 5 it is possible to develop basic measures to determine the relationship between EMS course completion, passing the national certification exam, and obtaining a state license to practice.

**Considerations:**

- Actual employment or affiliation is addressed in guideline 7; to the extent a state’s rules require employment or affiliation as a prerequisite to licensure, the data yielded in guideline 7 can be incorporated into guideline 6 as a step before issuance of licenses is quantified.
- The State EMS Office should coordinate with institutions that teach accredited EMS education programs to collect and assimilate needed EMS education data
- A real-time EMS education data collection and reporting system enhances its utility as a component of the education data reporting system
- EMS educational institutions should address any legal and technological barriers to participating in the data reporting process
- EMS education institutions’ data elements should be outlined clearly among all participating institutions
- EMS agencies should define policies, procedures, and legal authorities for sharing EMS education data with State Workforce Agencies as part of a comprehensive workforce data reporting system.
- The State EMS Office should be aware of which EMS educational institutions within the state may require primary affiliation with an organization before acceptance into an EMS course.

### Data Needs:

Data Element (from Guideline 1)	Data Definitions	Data Output
<b>Enrollment, by level [3.5.D]</b>	The number of students enrolled in the past 12 months, for each certification level (EMR, EMT, AEMT, Paramedic)	Number (count) by level
<b>Education program completers, by level [3.2.E]</b>	The number of students successfully completing program, in the past 12 months, for each certification level (EMR, EMT, AEMT, Paramedic)	Number (count) by level
<b>Education Program Certified Graduates, by level [3.6.D]</b>	The number of students who became Nationally Registered or State Registered, in the past 12 months, by level, for each certification level (EMR, EMT, AEMT, Paramedic)	Number (count) by level
<b>State EMS licensure level [2.1.E]</b>	The highest EMS level at which an individual can legally perform EMS services in the state by level (None, EMR, EMT, AEMT, Paramedic)	Number (count) by level

### Methodology:

#### 1) Matriculation Rate Calculation (rate enrollees become program completers)

Assuming you are able to get all elements of the data needs outlined above, first find your matriculation rate for your educational programs. Take your **Education program completers, by level [3.2.E]** and divide it by your **Enrollment, by level [3.5.D]**. The answer is your matriculation rate by level. (Multiply it by 100 and you have a percentage of students who complete from those who start).

**Example 1** (using 400 EMT students completing out of 500 that enroll)

Educational program completers, by level [3.2.E]			
<b>400 EMT completers</b>	<b>=</b>	<b>0.80</b>	
<b>500 EMT enrollees</b>		EMT matriculation rate	
<i>Enrollment, by level [3.5.D]</i>			

#### 2) Certification Rate Calculation (rate program completers achieve certification)

Again, assuming you are able to get all elements of the data needs section of this guideline, take your **Education Program Certified Graduates, by level [3.6.D]** and divide it by your **Education program completers, by level [3.2.E]**. This will provide you a rate for students who complete their course of study and achieve

state or national certification. (Multiply it by 100 and you have a percentage of those who obtain certification from those who are eligible).

**Example 2** (using 75 EMT students that achieve certification out of 100 who were completers)

$$\begin{array}{l}
 \text{Educational Program Certified Graduates,} \\
 \text{by level [3.6.D]} \\
 \hline
 \mathbf{75 \text{ EMT certified grads}} \\
 \hline
 \mathbf{100 \text{ EMT completers}} \\
 \text{Education program completers,} \\
 \text{by level [3.2.E]}
 \end{array}
 =
 \begin{array}{l}
 \mathbf{0.75} \\
 \text{EMT Certification Rate}
 \end{array}$$

### 3) Licensure Rate Calculation (rate certified graduates achieve licensure)

Again, assuming you are able to get all elements of the data needs section of this guideline, take your *State EMS licensees, by level [2.1.E]* and divide it by your *Education program certified graduates, by level [3.6.D]*. This will provide you a rate for students who complete their course of study and achieve state licensure. (Multiply it by 100 and you have a percentage of those who obtain licensure from those who are eligible).

**Example 3** (using 75 EMT students that achieve licensure out of 100 who were certified)

$$\begin{array}{l}
 \text{State EMS licensees,} \\
 \text{by level [2.1.E]} \\
 \hline
 \mathbf{75 \text{ EMT students}} \\
 \text{achieve licensure} \\
 \hline
 \mathbf{100 \text{ EMT certified grads}} \\
 \text{Educational Program Certified Graduates,} \\
 \text{by level [3.6.D]}
 \end{array}
 =
 \begin{array}{l}
 \mathbf{0.75} \\
 \text{EMT Licensure Rate}
 \end{array}$$

### 4) Calculating educational enrollment needs (known vacancies can easily be converted into educational enrollees needed)

Once you've done the basic math above you have a matriculation rate and licensure rate. If you have a known number of vacancies in the state or region (by level), it is now easy to calculate (and better plan and budget for) how many enrollees you need to fill these gaps based upon historical performance of your educational system.

Multiply your matriculation rate and your licensure rate and get its product. Now take known or anticipated EMS workforce vacancies by level and divide it by the product of the matriculation rate and licensure rate. This will give you an anticipated number of students you will need to accommodate in order to achieve your needed number of new licensed providers.

**Example 4** (given the calculated Matriculation Rate, Certification Rate and Licensure Rate in the previous three examples, calculate how many EMT students needed to fill 150 EMT positions.)

<i>Needed new EMT personnel</i>			
<b>150</b>		<b>=</b>	<b>200</b>
<b>(0.80 x 0.75)</b>			EMT students needed
(Matriculation Rate x Licensure Rate)			

**Outcome:**

These calculations provide information about how successful the EMS education system is in producing or nationally registered and state-licensed EMS personnel. These data are essential to understanding the efficiency of your education system (matriculation rate), quality of education as tested by the state or National Registry certification exam (certification rate), quantifying the number of individuals who become state licensed and even helping determine how many students are needed to fill anticipated or known vacancies. This information has never been collected on a national level and the implications are significant for the individual states that participate. Even if your state cannot acquire all the requested data, begin by gathering and utilizing what is available.

**Guideline 7**  
Workforce Planning & Development *Quantify Population Actively Functioning in a Paid or Volunteer Capacity (Workforce Supply)*

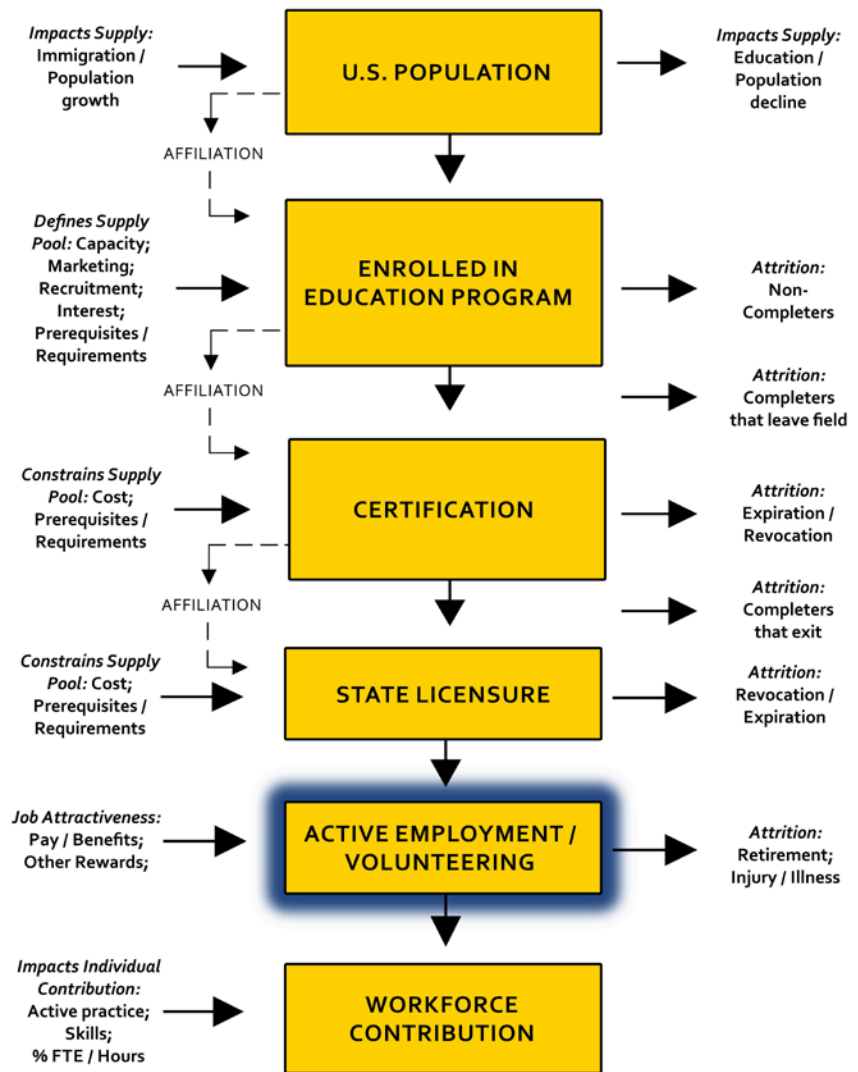
States should use data collected to quantify the population entering and continuing to function in the EMS workforce.

**Background:**

The EMS Workforce Assessment revealed and the previous guidelines have discussed that EMS workforce supply information is either not collected or is collected in such a way that creates barriers restricting its value and utility for comparison. The EMS Workforce Assessment has shown that the most basic workforce statistics, such as workforce size, couldn't accurately be estimated using the data currently available to states. That assessment report goes on to state that a high percentage of EMTs and paramedics (18%) hold more than one job. This alone makes it very difficult to quantify the population of current, active EMS personnel.

*The size of the existing workforce is unknown due primarily to a lack of information about volunteer EMS workers and cross-trained firefighter-EMTs. Similarly, it is not known how many students*

**National EMT and Paramedic Workforce Supply**



are in the educational pipeline to become EMS workers because there is not a central information source on education providers.<sup>55</sup>

In order to have the data necessary for determining the workforce supply, widespread adoption of *The National EMS Workforce Data Definitions* must occur. Adoption of *The National EMS Workforce Data Definitions* will improve the nation's ability to assess the EMS workforce and all states to accurately engage in workforce planning, while also providing consistent, replicable, and comparable data that can be used to develop other workforce programs and policies.<sup>56</sup>

#### Rationale:

Asking local EMS agencies to report their data to a central repository will allow that state to use the data in order to evaluate where these future workers will be found, which areas of the state are in need of programs or resources, and whether the future workers will meet the needs of the workforce demand within the state.<sup>57,58</sup> Uniform collection of active, licensed individuals will enable the State EMS Office to determine the EMS workforce population at a given period of time.

#### Considerations:

- Determining the number of licensed EMS personnel currently in the workforce is important for short-term forecasting of the workforce. *The EMS Workforce Agenda for the Future*<sup>59</sup> cited the necessity of other factors in creating an effective workforce planning models, including:
  - Current data on workforce supply (number of workers; number of students in pipeline) and demand (vacancy and turnover rates)
  - Worker compensation, including pay, benefits, and other incentives
  - “Environmental” factors, including:
    - Geographic factors
    - Population demographics that impact need for EMS services
  - Regulations
  - Numbers and types of other personnel in the region.
  - Economics and cost analysis, including budget considerations
  - Evaluation of the workforce planning model to determine that organizational objectives are being met
- Number of certification not indicative of supply because some states require affiliation for licensure

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<sup>55</sup> Ibid, NHTSA, *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment*, 2008

<sup>56</sup> National Highway Traffic Safety Administration (2013). *National EMS Workforce Data Definitions* (No. DTNH22-08OF-00122) Washington, DC: U.S. Department of Transportation.

<sup>57</sup> Ibid, Healthcare Georgia Report

<sup>58</sup> Ibid, Maryland Institute for Emergency Medical Services Systems

<sup>59</sup> Ibid, NHTSA, *Emergency Medical Services Workforce Agenda for the Future*



- This information is not easy to obtain and partnering with local EMS agencies and State Workforce Agencies may help in understanding all related variables

**Data Needs:**

Data Element (from Guideline 1)	Data Definitions	Data Output
<b>Agency Current Staffing</b> [4.13.E]	The number of individuals filling positions for which a current EMS license is a job requirement, expressed as full-time equivalents (FTEs), by level (EMR, EMT, AEMT, Paramedic)	Number (count) by level

**Outcome:**

Through use of data elements collected in Guideline 1, the state can create a short-term estimated forecast for licensed EMS personnel. This estimation can help the states determine how to meet the potential demand for EMS personnel for a specific time period, and use this number to augment workforce planning in the future.

### Guideline 8

#### Workforce Planning & Development

#### Understand EMS Workforce Demand

Utilize available information to analyze and understand the number of EMS jobs available for various types of personnel.

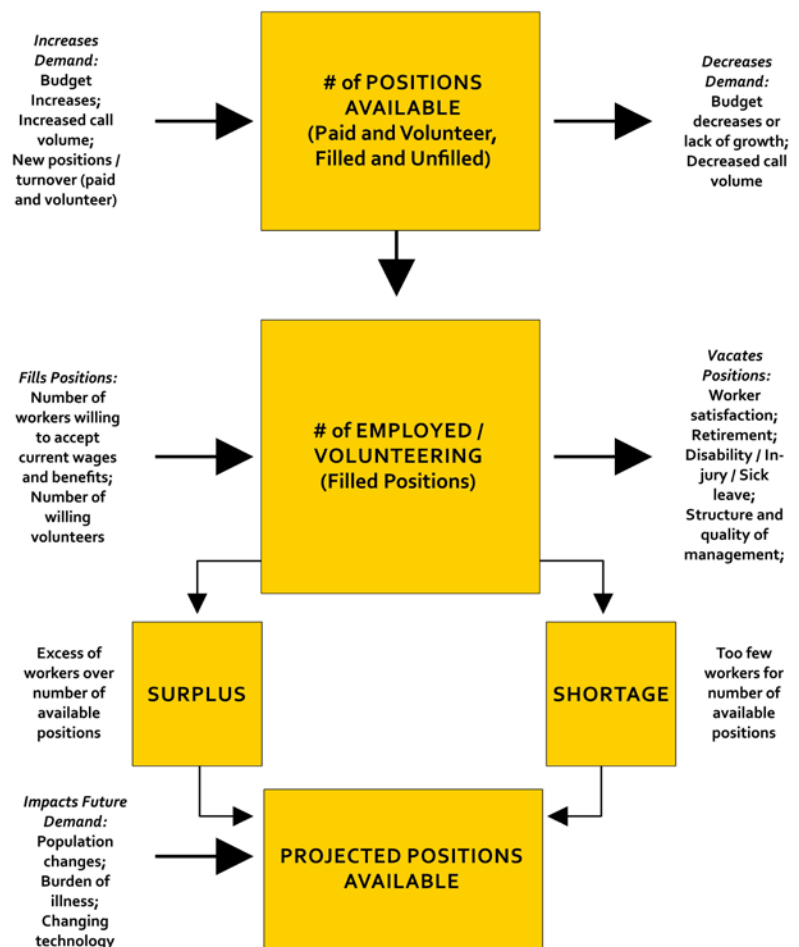
#### Background:

Following the model laid out in the EMS Workforce Assessment (see chart right), understanding the “demand” side of the equation is critical to understanding your state EMS workforce dynamics. Demand is defined as the number of jobs available for various types of personnel including both filled and vacant positions. In order to calculate the total workforce demand, we must include the total count of currently filled EMS jobs and volunteer opportunities and then add the anticipated growth. If we can accomplish these measurements accurately, we will have the ability to accurately measure the conditions of workforce shortages and surpluses. If all states are successful in accomplishing the work outlined in this guideline, we

will be able to gauge workforce shortages or surpluses on the national level. It should be clear that these calculations consider only those roles that provide direct patient care.

In the rapidly changing world of healthcare, it is more and more important for EMS to be able to measure the workforce demand, as this will become the basis of anticipating future needs for sustainability and growth. As outlined in the EMS Workforce Assessment, there has been very little study and understanding of the factors that

National EMT and Paramedic Workforce Demand



impact the number of EMS positions available or the current and future demand for workers.

### Rationale:

Understanding the demand for EMS personnel is fundamental to the understanding of current and future EMS workforce needs. Every state has an opportunity to collect data that will drive understanding of the demand for EMS workforce to meet the current and future needs of our healthcare systems and the communities we serve. Using data gathered in Guideline 1 it is possible to develop a basic measure to understand the relationship between EMS workforce demand for paid personnel and volunteers, and need.

### Considerations:

- Guidelines 1 – 3 are foundational to this guideline and are required for successful completion of this guideline
- The State EMS Office should coordinate with all EMS organizations to understand their current and future workforce demands. This should include:
  - Service personnel and location (address of specific station if appropriate)
  - Personnel level (EMR, EMT, AEMT, Paramedic)
  - Volunteer and paid positions
  - Rural / Urban setting
- State Workforce Agencies can be a source of job vacancy data and expertise about calculation methodology, analysis, and interventions
- EMS agencies should define policies, procedures, and legal authorities for sharing EMS demand data with state workforce agencies as part of a comprehensive workforce data reporting system

### Data Needs:

Data Element (from Guideline 1)	Data Definitions	Data Output
<b>Organization status [4.6.E]</b>	The type(s) of emergency medical personnel providing services for the agency:  <i>Volunteer; Non-volunteer; Combination (both volunteer and non-volunteer).</i>	Number (count) of types of service
<b>Agency new hires, by level [4.11.E]</b>	The number of individuals hired in the past 12 months to fill positions for which a current EMS license is a job requirement, by level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>Agency leavers, by level [4.12.E]</b>	The number of individuals who filled positions for which a current EMS license is a job requirement who left the agency in the past 12 months, by level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level

<b>Starting salary, by level [4.14.E]</b>	The starting salary for a new EMS worker at your agency, by level (EMR, EMT, EMT-I, AEMT, Paramedic)	Gross pay (\$) per unit (hour, day, week, month, year)
<b>Agency Current Staffing [4.13.E]</b>	The number of individuals filling positions for which a current EMS license is a job requirement, expressed as full-time equivalents (FTEs), by level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level
<b>Agency Anticipated Vacancies, by level [4.30.D]</b>	The number of EMS positions that the agency anticipates to fill in the next 12 months, expressed as full-time equivalents (FTEs), by level (EMR, EMT, EMT-I, AEMT, Paramedic)	Number (count) by level

### Methodology:

Using the yellow box diagram that outlines aspect of workforce demand at the beginning of this guideline (page 57) there are a few key pieces of data that are needed.

**1. Determine the number of positions available, by type (volunteer or paid) and by level (EMR, EMT, AEMT, Paramedic)**

a. Take **Agency Current Staffing, by level [4.13.E]** and add:

b. **Agency Anticipated Vacancies, by level [4.30.D]**

This gives you the first yellow box, “# of positions available”



**2. Determine the number of currently employed or volunteering, by type (volunteer or paid) and by level (EMR, EMT, AEMT, Paramedic)**

a. Simply use the **Agency Current Staffing, by level [4.13.E]**



**3. Determine the projected positions available to determine the extent of your current EMS workforce shortage or surplus, by type (volunteer or paid) and by level (EMR, EMT, AEMT, Paramedic)**

a. **Agency Anticipated Vacancies, by level [4.30.D]** gives you the number needed to determine “projected positions available”



**4. Collect and monitor indicators that impact workforce demand**

- a. **# of Positions Available (Paid and Volunteer, Filled and Unfilled Positions):** Increase or decrease to demand, budget changes, increased/decreased call volume, new positions / turnover (by type, by level)
- b. **# Employed / Volunteering (Filled Positions):** Number of workers willing to accept current wages and benefits, number of willing volunteers, worker satisfaction, retirement, disability/injury/sick leave, structure and quality of management
- c. **Projected Positions Available** Population changes, burden of illness, changing technology

**Outcome:**

These basic yet fundamental calculations are essential to the understanding of basic EMS workforce demand. Individual states that successfully gather the necessary data in Guideline 1, engage and involve local EMS agencies and State Workforce Agencies (Guidelines 2 and 3 respectively), and calculate the demand for individual services and collectively for their state will provide key elements for workforce planning. The additional data points contributing to shifts in workforce demand are essential but, like all data, are more powerful when part of a national effort to improve understanding.

## Guideline 9

## Workforce Planning &amp; Development

## Support Military &amp; Spouses Transitioning to the EMS Workforce After Military Service

States should support separating service members, veterans and their spouses who seek to obtain EMS certification and / or licensure through necessary policy, education, and legislation.

**Background:**

In 2012, there were more than 75,000 Active Duty, Guard, and Reserve members in healthcare support occupations, and last year nearly 10,000 separated from the military.<sup>60</sup> These military medical professionals have extensive experience with administering emergency medical care in high-pressure situations. Upon their separation from service, difficulty in obtaining private sector recognition for military training, experiences, and skill sets poses a challenge for separating military service applicants trying to obtain civilian certification and licensure.

Many states require that EMS applicants provide a completion certificate of an Emergency Medical Technician course. Many separating service applicants may be unable to provide this certificate, as transcripts from military courses may not be assessed as equivalent to the requirements of the state. In addition, while NREMT certifies Army and Air Force applicants at the EMT level, they may not have maintained their certification and may have never obtained a license in any state. Separating service applicants from the Navy may have never obtained NREMT certification at all.

In order to meet state requirements, many separating service applicants may have to pay for an EMS education course, which may duplicate many of the skills they have already been performing as a military medic. Additional requirements, such as affiliation with an EMS service, can also be difficult for both separating service applicants and their spouses to fulfill. These challenges may make it difficult for the employers to capitalize on the resources and time already spent training and educating service members.

To address these issues, the Department of Defense Military Credentialing and Licensing Task Force, in conjunction with the Department of Transportation and other federal agencies, is working with State EMS Offices and other institutions to streamline licensing and translate military training and experience into credit towards professional licensure. In the document “The Fast Track to Civilian Employment: Streamlining Credentialing and Licensing for Service Members, Veterans, and their Spouses”<sup>65</sup>, the Task Force outlined model legislation that states could initiate to streamline credentialing for returning

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<sup>60</sup> Executive Office of the President. 2013. The fast track to civilian employment: streamlining credentialing and licensing for service members, veterans, and their spouses. The White House. Accessed February 2013. [http://www.whitehouse.gov/sites/default/files/docs/military\\_credentiaing\\_and\\_licensing\\_report\\_2-24-2013\\_final.pdf](http://www.whitehouse.gov/sites/default/files/docs/military_credentiaing_and_licensing_report_2-24-2013_final.pdf)

military service EMS applicants and their spouses.

In February of 2013, The Veteran Emergency Medical Technical Support Act of 2013 (H.R.235) was passed in the United States House of Representatives. If passed by the Senate and signed into law by the President this bill would amend the Public Health Service Act to provide grants to States in order to streamline state requirements and procedures for veterans with military emergency medical training to become civilian emergency medical technicians<sup>61</sup>. Indiana and Maryland have both enacted legislation to streamline the credentialing of separating military service EMS applicants, and many other states are also considering legislation<sup>62 63</sup>.

#### **Rationale:**

Despite valuable military training and experience, separating military service applicants frequently find it difficult to obtain formal civilian recognition of their military training, experiences, and skill sets through civilian certification and licensure.<sup>47</sup> Frequent location changes of military families and variability in state requirements for reciprocity and licensure make obtaining credentials difficult for spouses of active military service members. By aiding separating service applicants in the process of obtaining civilian occupational credentials and licenses, the State EMS Office can meet employer needs for skilled workers while capitalizing on the education, training and experience already received by returning military service applicants and their spouses.

#### **Considerations:**

- Army and Air Force medics are required to obtain NREMT certification as an EMT during their service, but may not have completed the continuing education to maintain their certification.
- Hospital Corpsmen of the US Navy may obtain NREMT certification during service.
- The Joint Services Transcript (JST) provides a description of a service member's military schooling and work history and could be used by the State EMS Board or academic institutions to validate a military medic's military occupational experience and training.
- Draft Model EMS Legislation for "Licensure of Military Trained Applicants" can be found in "The Fast Track To Civilian Employment: Streamlining Credentialing and Licensing for Service Members, Veterans, and their Spouses"<sup>64</sup>

<sup>61</sup> 113<sup>th</sup> Congress 2013-2014. H.R. 235, Veteran Emergency medical technician support act of 2013. Introduced 1-14-2013. <http://thomas.loc.gov/cgi-bin/bdquery/z?d113:h.r.235>:

<sup>62</sup> Indiana Senate. Senate Enrolled ACT no. 290. First Regular Session 118<sup>th</sup> General Assembly 2013. <http://www.in.gov/legislative/bills/2013/PDF/SE/SE0290.1.pdf>

<sup>63</sup> Senate Bill 273. Veterans full employment act of 2013. 2013. Chapter 154, 2013 session Maryland Senate. Accessed April 22, 2013

[http://mgaleg.maryland.gov/2013RS/Chapters\\_noln/CH\\_154\\_sb0273t.pdf](http://mgaleg.maryland.gov/2013RS/Chapters_noln/CH_154_sb0273t.pdf)

<sup>64</sup> Executive Office of the President. 2013. The fast track to civilian employment: streamlining credentialing and licensing for service members, veterans, and their spouses. The White House. Accessed February 2013.

- State legislation for EMS could include a set of provisions that complement the efforts currently underway by the Department of Defense by including following features:
  - A bill including all four commonly identified levels of EMS personnel: EMR, EMT; AEMT; and paramedic
  - A bill that specifies the type, length, and time limit to be applied in considering military experience for licensure and potentially waiving attaining a certification or passing an exam
  - A bill that explicitly recognizes individuals who currently hold an active NREMT certification

Some academic institutions may offer a transition program for military medics to become nationally certified civilian Advanced EMTs or Paramedics.

**Data Needs:**

None identified from *The National EMS Workforce Data Definitions*, however local recruiters, Department of Defense and veteran associations may be of service.

**Outcome:**

By supporting policies, education programs and legislation that specifies the conditions that separating service members and veterans must satisfy in order to obtain emergency medical services licensure within the state, the State EMS Office can capitalize on the experience and training of these separating military service applicants to fill employer needs within the state EMS workforce.



## Guideline 10

Health, Safety &amp; Wellness

*Maintaining a Healthy EMS Workforce*

The State EMS Office is encouraged to collect data related to EMS worker illness and injuries.

**Background:**

The 2011 *EMS Workforce Agenda for the Future* calls considerable attention to the need for the systematic collection of worker illness and injury data in the EMS workforce.

The NHTSA Office of EMS has partnered with the National Institute for Occupational Safety and Health (NIOSH) in order to improve national EMS workforce injury and illness surveillance. NIOSH uses the National Electronic Injury Surveillance System – Work (NEISS-Work) to collect data on EMS worker injuries treated in 67 emergency departments throughout the US. Efforts such as this are intended to improve national understanding of EMS worker injury and illness trends.

According to a 2011 report from the U.S. Bureau of Labor Statistics, the rate at which EMTs and paramedics suffered illness or injuries resulting in days away from work was 38.1 days per 100,000 workers, 3.3 times the rate of the average worker.<sup>65</sup> Another study showed the injuries occurring to EMS staff at a rate of 34.6 injuries per 100 full time workers per year, with sprains, strains, and tears making up 50% of injuries reported, and overexertion being most common injury event (37%)<sup>66</sup>.

An emerging body of work suggests that equal consideration and proactive interventions need to exist for other conditions such as substance abuse and psychological anomalies such as depression, anxiety and stress.

According to the EMS Workforce Agenda, “[M]any EMS leaders...would prefer workplace policies, that foster a culture that supports the...mental health of EMS workers[.]” A study in 2013 that utilized data from the 2009 recertification survey of nationally certified EMS professionals estimated the prevalence of depression, anxiety, and stress among a large cohort of nationally certified EMS professionals<sup>67</sup>. Demographic and work-life characteristics associated with depression, anxiety and

<sup>65</sup> United States Bureau of Labor Statistics, 2011a. Nonfatal Occupational Injuries and Illnesses Requiring Days Away From Work, 2011. Table 4 Number, incidence rate,1 and median days away from work2 for nonfatal occupational injuries and illnesses involving days away from work3 by selected detailed occupation and private industry, state government, and local government, 2011<[http://www.bls.gov/news.release/archives/osh2\\_11082012.pdf](http://www.bls.gov/news.release/archives/osh2_11082012.pdf)> retrieved January 11<sup>th</sup> 2013

<sup>66</sup> Maguire BJ, Hunting KL, Guidotti TL, Smith GS. 2005. Occupational injuries among emergency medical services personnel. *Prehospital Emergency Care* 9: 405-411.

<sup>67</sup> Bentley et al. 2013. An assessment of depression, anxiety, and stress among nationally certified EMS professionals. *Prehospital Emergency Care* 2013;17:330-338.

stress were identified within the cohort, but it was not possible to determine the cause(s) of depression, anxiety, and stress among the EMS cohort used in the study.

According to a 2009 report by the NEMSAC Oversight, Analysis, and Research Committee (OAR), “the concepts around patient safety are not yet ingrained in the EMS community. The principles that create a more safe environment, particularly leadership that creates and fosters an environment without fear, are not absent from the community, but have not yet been broadly adopted.” The recommended action/strategy of the OAR was for “all levels of EMS: From government (State and Federal) through leadership/management, EMS agencies, and educators and to the level of the individual provider should adopt the EMS Culture of Safety<sup>3</sup>”.

The *National EMS Culture of Safety Strategy* is a nation-wide effort begun in 2010 with funding from NHTSA and HRSA to improve the safety of both the patient and the EMS personnel. The intent of the strategy is to create, encourage, and support a cultural movement, structures, resources, reporting mechanisms and related elements that advance both improved responder safety, improved patient safety, and improved safety of the community, each closely linked to the others.

**Rationale:**

There is a need for better understanding of the types of injuries and other conditions affecting EMS personnel. The collection of workforce illness and injury data from local agencies by State EMS Offices can provide the foundation for evidence-based safety standards, operational practices, and prevention strategies. The *Strategy for a National EMS Culture of Safety* may provide useful guidance to the State EMS Office in reaching out to local EMS agencies regarding worker safety.

**Considerations:**

- Identify existing data sources to draw data from (state licensure database, NEMSIS, NEISS-Work, Bureau of Labor Statistics, National Registry, academic institution reports, etc.)
- Coordinate with hospitals, occupational safety experts and local EMS agencies about the importance of reporting these incidents and collecting this data
- Facilitate the sharing of data and analysis with stakeholders and local agencies
- If collecting data elements not defined in *The National EMS Workforce Data Definitions*, utilize data elements recorded by other state/hospital databases
- For additional information on EMS worker injuries, including data from NEISS-Work, consult NIOSH’s EMS Workers web-link at <http://www.cdc.gov/niosh/topics/ems/>
- The *Strategy for a National EMS Culture of Safety* is currently in final draft stage, and expected to be released in September 2013

- The State EMS Office is encouraged to review current articles and media to enable understanding of new threats to safety within the state, and best practices for prevention

### Methodology:

The State EMS Office should use the data collected in Guideline 1 to create guidelines and evidence-based practices regarding health and safety of EMS personnel.

The following categories are recommended:

#### **Health and Wellness initiatives:**

- Encourage EMS agencies to promote and maintain appropriate fitness levels within their agencies
- EMTs and paramedics should understand the importance of physical fitness on their job performance and personal health
  - The National Association of EMTs (NAEMT) could be used as a resource by local EMS agencies. The NAEMT’s “EMS Fitness Project” was initiated to reduce the number and severity of injuries and lower the level of chronic disease within the EMS practitioner population<sup>68</sup>

### Data Needs:

Data Element (from Guideline 1)	Data Definitions	Data Output
<b>Job Related Illness and Injury (time lost) [4.23.E]</b>	The number of hours lost due to job-related illness or injury in the past 12 months, by level (EMR, EMT, AEMT, Paramedic)	Number (count)

### Outcome:

By collecting data on “job related illness and injury (number of hours lost)” the state can establish a baseline understanding of the epidemiology behind EMS worker illnesses and injuries that lead to time away from work. By participating in the initiatives laid out by the *Strategy for a National EMS Culture of Safety*, the state can help to reduce adverse events in EMS, and create an EMS culture in which considerations for the safety of patients, personnel, and the community permeate the full spectrum of activities. Data can drive evidence-based safety standards, operational practices, and prevention strategies that ensure a safe and productive EMS workforce.

<sup>68</sup><http://www.naemt.org/Libraries/Health%20and%20Safety%20Documents/Task%20Performance%20and%20Health%20Improvement%20Recommendations.sflb>

# **APPENDIX**

## **Research and Literature Review for Emergency Medical Services (EMS) Workforce Data Collection, Planning, and Development Guidelines**

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## Executive Summary

Efforts to deal with Emergency Medical Services (EMS) workforce planning and development, through the development of EMS workforce data collection, planning, and development guidelines, are being led by the National Association of State EMS Officials (NASEMSO) with funding support from the National Highway Traffic Safety Administration. This research and literature review was performed to assist with the development of these guidelines by providing information about on-going EMS workforce planning efforts and about issues that need to be addressed in successful workforce planning activities.

EMS workforce planning enables State Departments of Emergency Medical Services to address numerous questions, including:

*What can be done to help ensure an adequate supply of EMS workers?*

To adequately address this question requires an ability to answer further, more specific questions:

- *How many EMS workers are there, at each practice level, in my state?*
  - *Where are they located?*
  - *How many are engaged in providing EMS services, and at what levels of engagement?*
- *Are there shortages of EMS workers, at any or all of the EMS practice levels?*
  - *If so, where are the shortages?*
- *Will there be enough EMS workers in the future?*

Several states are engaged in workforce planning activities. Underlying these activities is a need for quality workforce data, which can be obtained in a number of different ways. There must be good recordkeeping systems, providing current and accurate information about the numbers of EMTs, at all levels, who are engaged in the provision of EMS services and the numbers of EMTs, at all levels, who are being trained to replace those leaving the workforce. Creating and maintaining these systems is a challenge critical for addressing the above questions.

*Counting the number of licensed EMTs.* In order to provide emergency medical services, EMTs must be licensed. Nearly all of the states require periodic recertification to maintain licensure. Accordingly, counts of the number of EMTs, at each level, who possess current valid licenses to practice EMS in the state is the typical starting point for producing counts. The Federal Interagency Committee on EMS' (FICEMS') *National EMS Assessment*, using data from NASEMSO's survey of State EMS Offices, estimated there are 826,111 credentialed EMS professionals at the EMT-Basic, EMT-Intermediate, and Paramedic levels. But, the quality and accuracy of data being reported is not constant across states. States should be strongly encouraged to obtain and report the highest quality data for both their own workforce planning and for national workforce planning purposes.

*Why counts don't count.* Being licensed is only one component of workforce supply (availability to work). Quality EMS workforce planning requires additional data. The EMS workforce is very different from other health professions workforces. It is not uncommon for EMS workers to work for more than one agency. In fact, in 18 states more than half of the EMS workers work for more than one agency. From the perspective of staffing and scheduling shifts, it is important to know how many full-time equivalent (FTE) EMS workers are needed – a number that can vary significantly from the number of EMS workers with current licenses.

The EMS workforce includes a very large volunteer component. In no other allied health profession do volunteers comprise as large a proportion of the workforce as in EMS. And, it has been clearly shown that volunteers' reasons for entering the profession, satisfaction with different aspects of their job, and reasons for leaving are different from those of compensated individuals. They are also much more prevalent in rural communities and face challenges of maintaining skills due to lower call volumes. For workforce planning purposes, it is very important to know how many providers, at each service level, are volunteers and how many are fully compensated.

In addition, a substantial proportion of the nation's EMS workers are cross-trained and deliver fire protection or public safety services. In large cities, all of the fire services provide some level of EMS services; overall, 60% of the nation's fire departments provide at least basic EMS services. EMS workforce issues for cross-trained EMS workers and those affiliated with EMS-only agencies can be very different, for the same sorts of reasons that these issues can be very different for volunteers and non-volunteers.

*How is my state doing, in comparison with other states?* Being able to compare states and localities facilitates the identification of state and local entities which are successful in addressing their EMS workforce issues and can potentially identify workforce shortages. But, comparisons must be made cautiously because, all too frequently in EMS, the same word means different things in different states or in different agencies. An individual or agency that is considered as 'volunteer' in one state or locality may well be considered to be 'employed', 'compensated', or 'non-volunteer' in another. And, the facts that there are at least 39 different levels of EMS workers in the nation, with the numbers of levels in different states ranging between two and eight, also create problems in making comparisons across practice levels. If the EMS community moves toward common definitions and methods of tracking, workforce planning for the U.S. overall will be enhanced.

Widespread adoption of the *EMS Education Agenda for the Future: A System Approach*, particularly with respect to national EMS education program accreditation and national EMS certification would facilitate the collection of comparable workforce supply data, by level, among other benefits. Widespread adoption of EMS workforce definitions, developed by the National EMS Information System (NEMSIS) and NHTSA's National EMS Workforce Data Definitions project would help ensure that State EMS offices are talking the same language.

*What do we know about EMS workforce issues?* Over the past decade, there has been a great deal of research on issues related to EMS worker retention, recruitment, and health and safety.

Recruitment and retention issues can vary substantially as a function of practice level, agency type (e.g., volunteer vs. non-volunteer; fire service vs. EMS-only), and locale (rural vs. non-rural), but there are concerns common to all EMS workers. We know that EMS is a dangerous occupation, with high injury rates. The incidence of various health problems, including back problems, hearing problems, obesity, and sleeping problems and fatigue is substantial. These problems, particularly sleep and fatigue, are negatively impacting the quality of services being provided by EMS workers. Furthermore, EMS workers are exposed to pathogens, both in the field and at their work place. In one recent study of fire service facilities, fecal coliforms were detected in 100% of locker room samples and 90% of couches.

We are also learning that there are effective policies and practices that can help reduce the risk of injuries and accidents. Exposure to patients' body fluids and needlesticks are reduced by having supervisors speak to safety about Universal Precautions and including adherence to safety procedures as part of one's job evaluation. And, higher levels of seat belt use are associated with the presence of organizational seat belt use policies.

*What do we know about the next generation of EMS workers?* Nearly all of the states require that their paramedics be nationally certified. As of December 31, 2012, eligibility for paramedic testing at the National Registry of EMTs will require candidates to have graduated from a program that has been accredited by the Commission on Accreditation of Allied Health Education Programs. This will facilitate the collection of information about the number and types of individuals completing paramedic training. At practice levels below paramedic, most training occurs in non-academic settings and in settings for which accreditation is not required. This creates challenges in learning about the numbers and types of individuals enrolled in these programs.

*What will be the future demand for EMS workers?* The impacts of the Patient Protection and Affordable Care Act (ACA) on the demand for ED care and transport are unclear. However, no one is predicting declines in demand for prehospital care and transport. As the number of elderly Medicare recipients and Medicaid enrollees increases, the number of transports is likely to increase since many of these elderly lack their own transportation.

The public's perceived need for EMS workers will reflect both outcomes research (that is, demonstrating the value of specific prehospital interventions will likely increase the public's desire to have an adequate supply of individuals who have been trained and are skilled in providing these services) and public attitudes about disaster preparedness (in case of mass casualty incidents or pandemics, there will be a need for an adequate supply of trained EMS workers who are willing and able to provide health services). Conversely, in difficult economic times, cost issues will negatively impact demand. The *JEMS 2011 Salary & Workplace Survey* reported that over half of the EMS agencies responding to their survey reported a decline in their operating budgets over the last 12 months.

*What can be done to assist States and localities with their EMS workforce planning?* Since the EMS workforce is so different from other allied health workforces, there are few lessons to be learned from other allied health professions, other than the fact that good data are essential for good workforce planning. The adoption of the *EMS Education Agenda for the Future: A Systems Approach* and the



adoption and use of common definitions for collecting workforce data will be very useful initial steps in promoting the collection of quality data.

Cooperation and sharing of best practices (with respect to data collection policies, practices, and analytic approaches) and results amongst the State Offices of EMS can promote efficiencies and reduce costs for all. While workforce planning is a common need, the development of common tools and approaches can enable workforce planning that can address the unique needs of each state.

**Introduction.** The Emergency Medical Services (EMS) workforce is available 24 hours a day, seven days a week, to help meet the emergency care needs of the nation. To meet these needs, there must be sufficient numbers of well educated, adequately prepared, and appropriately credentialed EMS workers. The *EMS Workforce Agenda for the Future* identified four critical elements for developing such a workforce:

(1) Data and research

(2) Education and certification

**(3) Workforce planning and development**

(4) The safety, health, and wellness of the EMS workforce (Chapman, Lindler, & Kaiser, 2011).

A number of efforts are on-going to address these elements. Efforts to deal with EMS workforce planning and development, through the development of EMS workforce data collection, planning, and development guidelines are being led by the National Association of State EMS Officials (NASEMSO). This research and literature review is intended to facilitate the development of these guidelines through the provision of information about on-going EMS workforce planning efforts and about issues that must be addressed in successful workforce planning activities. These guidelines will prove invaluable for each state when it tries to answer the following questions:

Are there enough EMS workers in the state to meet present needs?

Are there shortages of EMS workers at any or all of the EMS practice levels?

Will there be enough in the future?

What can be done to help ensure an adequate supply of EMS workers?

We have organized this review to:

(1) Discuss the methodology employed in locating and selecting articles, documents, and reports for this review

(2) Provide an overview of EMS workforce planning, including a discussion of recent workforce planning activities in selected states

(3) Describe general characteristics of the EMS workforce, including its size and composition

(4) Discuss recent research activities related to EMS worker attraction and retention, including health and safety and worker satisfaction and commitment

(5) Discuss research related to EMS education, a key factor in predicting supply

(6) Discuss EMS outcomes research and efforts relevant to projecting demand

A final section, with recommendations and conclusions, ends this review.

## METHODOLOGY

In 2006, as part of efforts to develop the *EMS Workforce Agenda for the Future*, a literature search was conducted. Using Pub Med and using the broad term “emergency medical services” more than 32,000 citations were located. Using PubMed and a variety of MeSh search terms yielded even more published studies. To focus the literature search on the EMT and paramedic workforce, the search terms were narrowed to EMT and paramedic. This search yielded 302 references between 1973 and March 2006, including both refereed and non-refereed journals.

In January 2009, this search was updated, focusing on articles published after 2006. This additional search led to the identification of 197 additional references. All of these references were reviewed, leading to the identification of 19 articles, which were obtained and reviewed in their entirety.

In February, 2012, for this effort, the search was further updated, focusing on articles published since January 2009. Using a similar strategy (that is, focusing on the search terms ‘EMT and paramedic’), a total of 37 potential articles was identified. To expand the search, the terms ‘EMT and workforce’ and ‘paramedic and workforce’ were used to identify 37 and 404 additional potential articles, respectively. Abstracts for all of these 478 articles were reviewed, leading to the identification of 40 articles which were obtained and reviewed in their entirety.

Table 1 displays the PubMed keyword search terms and number of citations found with each group of key words, for 2006, 2012, and articles published since January, 2009.

**Table 1. PubMed Search Results**

Search Term	Limitier	Number of results: 2006	Number of results: 2012	Number of results: 2009-12
“emergency medical services”		21,101	30,619	4,960
	Injury	3,960	6,037	1,060
	Personnel	3,018	4,259	631
	Paramedic	2,529	3,510	466
	Ambulance	2,455	3,709	630
	Workers	1,237	1,774	252
	Illness	579	1,003	224
	EMT	230	288	21
	Staffing	156	237	36
	“job satisfaction”	51	81	13
	“patient outcomes”	47	134	56
	“human resources”	18	41	14
	Projections	7	278	27
EMT or paramedic		33,393	44,637	5,966
paramedic		32,381	40,129	3,795

<b>Search Term</b>	<b>Limiters</b>	<b>Number of results: 2006</b>	<b>Number of results: 2012</b>	<b>Number of results: 2009-12</b>
EMT		1,314	4,912	2,208
“prehospital care”		708	1,006	163
EMT and paramedic		302	404	37
“ambulance staff”		70	106	21
“EMS workers”		16	30	11
“ambulance workers”		8	21	4

We also visited the Federal Interagency Committee on EMS (FICEMS) website, the National EMS Advisory Council (NEMSAC) website, and the National Association of State EMS Officials (NASEMSO) websites and downloaded a variety of documents (reports, meeting notes, and newsletters). In addition, we contacted several EMS researchers and asked them to send copies of recent articles they thought might be of relevance for this project.

Our search of the grey literature – that is, reports, documents, and other materials that are not published in journals or published commercially -- included a Google search using similar terms. This was especially helpful in identifying workforce planning activities conducted by or for several different states. Ultimately, a total of 59 articles, reports, and other documents were obtained and reviewed.

## EMS WORKFORCE PLANNING

The *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment* was prepared to address issues relevant to the process of EMS workforce planning. In particular, it attempted to address the following questions, critical for workforce planning:

- *Will the EMS workforce be of adequate size and composition to meet the needs of the U.S. population in the future?*
- *How can potential workers be attracted to and encouraged to stay in the field of EMS?*
- *How can adequate EMS workforce resources be available across all populations and geographic areas?*
- *Do we have the data and information needed to address the future demand for and supply of EMTs and paramedics in the United States? What information is lacking and how might it be obtained? (p.7)*

Workforce planning requires forecasting the future supply, demand, and need for workers. A critical first step in estimating supply is a good estimate of the size of the current workforce. Challenges in estimating the supply – that is, the number of individuals who are trained, credentialed, willing, and able to provide EMS services at each EMS level – were immediately noted. Although there are numerous potential sources for this information, the lack of consistent definitions for provider levels and workforce terms (such as credentialing, registration, certification, licensure, and volunteers) has been a major barrier to the production of maximally useful estimates (Chapman et al., 2008). The *National EMS Assessment* reiterated these concerns in their recommendations:

- *A standard definition of an EMS organization that can be used by every state and territory should be implemented. (p.534)*
- *A standard definition of volunteerism should be established so that volunteerism can be tracked within the industry over time. (p. 534)*

A nearly identical concern was expressed by the Health Resources and Services Administration (HRSA):

*Complicating the project (workforce data collection) is the absolute lack of a consistent definition of the word 'volunteer'. (HRSA, 2006, p.3)*

*Supply.* Supply issues also include future supply: The numbers of individuals being trained for EMS and the levels at which they are being trained. As will be discussed subsequently, good data concerning the numbers of paramedics being trained in nationally accredited programs should be available soon. Data on other paramedic programs should be available in the near future as the *EMS Education Agenda for the Future: A Systems Approach* is implemented. However, 'quality' data about the numbers of individuals undergoing training at lower EMS levels is not readily available. This reflects the prevalence of private proprietary and temporary education programs at which EMTs below the paramedic level are trained and the lack of standardized record keeping and reporting requirements. Recruitment issues, as discussed subsequently, are also important workforce supply concerns.

*Demand.* Workforce demand, the number of projected jobs available in the future, is challenging to measure. Demand is basically the number of jobs available at each of the different EMS levels and the projected jobs anticipated to be available in the future. It includes the workers needed to replace those leaving existing positions and workers needed to fill new positions. Supply and demand issues interact. For example, worker retention directly impacts demand, as workers leaving the field create vacancies. Worker satisfaction and worker health and safety issues can similarly be considered as demand issues. Recent research in these areas is summarized later in this review.

Quantitative data do not indicate a current shortage of EMTs or paramedics. If shortages were prevalent, one would expect to see rapid increases in wages. This does not seem to be happening. However, qualitative data clearly indicate shortages in some sectors and geographic areas, particularly in rural areas (Chapman et al., 2008). These perceptions were reinforced by expert panels, chosen by NASEMSO, and comprised of state EMS officials knowledgeable about their state's local, regional, and state EMS capacity and service delivery, as part of the *National EMS Assessment*. They noted that workforce shortages exist in many states. The shortages are most pronounced in rural areas where there appears to be a tendency for EMS workers to move to larger communities with higher salaries and greater professional opportunities.

*Issues in measuring the size of the workforce.* The *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment* noted that the EMS workforce bridges two distinct environments: healthcare and public safety. The composition of the workforce, comprised of both employed and volunteer workers, is unique among the allied health professions. In no other allied health profession do volunteers comprise as large a proportion of the workforce as in EMS. EMS leaders clearly wish to advance the workforce, but the data collection infrastructure necessary to do this is largely undeveloped (Chapman et al., 2008).

The *National EMS Assessment*, commissioned by the Federal Interagency Committee for Emergency Medical Services (FICEMS) and funded by the National Highway Traffic Safety Administration (NHTSA), was recently completed and disseminated. Among its objectives were the description of EMS and 911 systems at the state and national levels through the use of extant data sources and through the conduct of four Expert Panels. The main data sources used were NASEMSO's 2011 *EMS Industry Snapshot*, the National EMS Database, maintained by the National EMS Information System Technical Assistance Center (NEMSIS TAC), and expert panels. Findings dealing with workforce data quality and data collection issues included:

*- The workforce is very difficult to describe and measure. There should be increased efforts to better define workforce trends. There is so much movement by EMS professionals in and out of the profession; it is difficult to determine the baseline workforce denominator. (p. 535)*

The *National EMS Assessment* also recommended:

*Adoption of state requirements for local EMS data collection and submission to state EMS data systems so that each state data system can be population based, rather (than) a convenience sample of participating agencies. (p. 19)*

*Development of improved data systems that allow for the differentiation between rural and urban EMS data in order to better describe and understand any geographic differences that may exist. (p. 19)*

A good deal of data were collected about state EMS offices in NASEMSO's survey of state EMS offices. Of the 50 state EMS offices, 44 are within a state department or a government entity. In 37 states, regulatory functions comprised over half of the work performed by these offices. EMS System Planning and local EMS data collection receive no or minimal effort in 43% of the states.

The need for more and better EMS workforce planning has been noted by other researchers:

*More data are needed to develop programs and policies that will ensure adequate EMT and emergency medicine physician workforce capabilities for both standard and surge scenarios. For EMTs, better information is needed on the number, level of training, and location of volunteer and paid professionals to accurately assess shortages...*

*... essentially no information is available on the adequacy of the EMT or emergency medicine physician workforces to provide appropriate medical care during catastrophic events... Combined with representative survey data, models can be used to develop new policies that will enhance preparedness and resilience by addressing shortages among emergency medical care workforces (Halpern & Renaud, 2010).*

*State EMS planning and system review activities.* Several states have conducted and disseminated EMS workforce planning assessments and reports, as part of their efforts to identify or deal with EMS workforce issues. For example, New Jersey's assessment focused on concerns dealing with the treatment of EMS workers, in comparison with fire and public safety workers. They noted that EMS staff were treated as second class citizens, particularly with respect to benefits. The EMS worker, unlike fire and public safety workers, did not receive compensation for on-the-job injuries; their families did not receive benefits for on-the-job fatalities. In addition, opportunities for career advancement were more restricted for EMS. It was also felt that EMS volunteerism was declining, which was attributed to a number of factors:

- Increased levels of training
- Fear of costly lawsuits
- Political issues (within local EMS services)
- Poor local EMS agency management
- Training requirements for maintenance of certification (Schaenman, 2007)

Unlike New Jersey's review which was, by and large, not driven by quantitative data, Virginia was able to obtain and use data from a number of sources, including their state Department of Health, Office of EMS databases, and federal data. In addition, they conducted interviews with 12 EMS leaders representing 39 agencies and also conducted focus groups. It was noted that over half (51%) of the 24,366 certified EMS professionals in Virginia who were affiliated with an agency were volunteers and that while the pool of volunteers is shrinking, the population of the state is growing. They concluded that the main issues in EMS in their state are recruiting and retention and that it would be wisest to focus on retention concerns.

The major issues identified as potential causes of the decrease in the volunteer pool were:

- Time demand on volunteers
- More demanding training requirements
- Increasing call volumes
- Leadership quality and continuity
- Changing nature of business (e.g., funding source changes, integration with other providers, transition from volunteer to career staffing, and serving an increasing number of retiring baby boomers).

To try to deal with retention issues, they identified market segments, through creation of a typology for classifying agency types and then proposed tool development for each segment. Considerations in tool development also included population density, agency size, city/county population projections, and staff levels.

Nonetheless, their efforts were hampered by EMS workforce data shortages. In particular, it was noted that *“EMS professional turnover rates are not well tracked or documented”* (Renaissance Resources, 2005, p. 27).

Nebraska conducted an on-line survey of 413 EMS services and obtained an 87% response rate in their efforts to deal with EMS workforce issues. This survey noted that there were 962 vacant EMS positions (146 paid; 816 unpaid) in the state. Results from the survey indicated that the average tenure for an EMS worker in Nebraska was 12.4 years before resigning. The major reasons for leaving were: moving (47%), followed by age (41%), family (37%), and time (32%). (Respondents could provide more than one reason.)

The vast majority of basic life support (BLS) services in Nebraska were unpaid (vs. partially paid or fully paid). Conversely, only 31% of advanced life support (ALS) services were unpaid. Survey results also indicated that simple counts of volunteers may not provide an in-depth understanding of workforce issues. In services with 300 or fewer calls in the past year, there were substantial differences between the numbers of personnel on roster and number of ‘active’ personnel (those who participate in 25% or more of an agency’s calls). 2,345 of 3,275 volunteers were ‘actively’ responding, strongly suggesting large differences in amounts of time that different volunteers can devote to their EMS activities (Mason et al., 2010).

In addition to state workforce planning activities, general workforce issues have been investigated by other groups. A recent survey of 1,425 local EMS directors, using a sample that was stratified by rural and urban locations, and which achieved a 57% response rate, noted the following:

- Reliance on a volunteer workforce is much greater in rural areas. Nearly half (49%) of all volunteer agencies are in rural areas.
- Shortages are more prevalent in rural areas. Half (50%) of urban county agencies were fully staffed vs. 43% of the agencies in rural areas.



- A lower proportion of designated medical directors (DMDs) in rural areas have emergency medical training than in other areas. In addition, rural EMS directors report it is more difficult to recruit DMDs.
- Local employers are not supportive of their employees' EMS volunteer activities.
- EMS training programs are too far away, too long, and too expensive.
- Retaining EMTs and paramedics was "sometimes a problem" for 55% of the EMS directors.
- Directors in rural areas were more likely to report retention was "always a problem" (22% vs. 14%).
- Rural agencies reported they were more likely to lose staff due to burnout (42% vs. 34%) and due to difficulties meeting continuing education requirements (41% vs. 33%). But, dissatisfaction with administration/management (23% vs. 14%) and dissatisfaction with other staff (25% vs. 19%) was more of a problem in urban counties.
- Freestanding EMS agencies have greater recruitment problems than fire departments. Freestanding EMS agencies are more common in rural areas.
- Overall, volunteer agencies (which are more common in rural areas) are significantly more likely to have difficulty with recruitment and retention. Lack of pay is a problem.
- Rural agencies are more likely to have only EMT-Basics (22% vs. 15%) (Freeman, Patterson, & Slifkin, 2008).

The collection of other EMS workforce data, such as injury, fatality, motor vehicle crash, and needlestick rates is rare among state EMS agencies. The *2011 EMS National Assessment* noted that only one state EMS office currently monitors EMS on the job injury data, 18 states monitor EMS work fatalities, 11 states monitor EMS vehicle crash data, and seven states monitor needle stick data.

For local workforce planning efforts, crew configuration is a matter of importance, to determine optimal crew sizes and composition. A recent study demonstrated significant advantages associated with having at least one paramedic on first responder crews. Three- and four-person crews were also significantly faster in their response times and task performance than two-person crews (Moore-Merrell et al., 2010).

Where crews and transport vehicles are physically located is another concern. In Singapore, geographic information system (GIS) data about ambulance deployments for cardiac arrest was used to increase the number of ambulance bases from 17 to 32 while keeping the number of ambulances and staff constant. The location of the ambulances was also varied as a function of time of day. This approach led to a significant decrease in response times (Ong et al., 2010). Other researchers are working on developing algorithms based on shift scheduling (Rajagopalan et al., 2011) and population characteristics. Since interventional probability increased exponentially with age, particularly for those over the age of 75, there are clear advantages of locating paramedic units proximal to areas with high elderly population densities rather than simply using total population as a criterion (Livingston et al., 2010).

## **EMS WORKFORCE CHARACTERISTICS (SIZE)**

Perhaps the most important factor to be considered in workforce planning is the size of the workforce at each EMS level. Since each state has the authority to create its own EMS certification and licensure levels, there are at least 39 different licensure levels of EMS workers in the nation (Margolis, 2007). In the state of Washington, there are eight separate and distinct licensure levels of EMS workers; in Delaware, there are only two.

The National Scope of Practice Model defines and describes four levels of EMS licensure: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), and Paramedic, with each level representing a unique role, set of skills, and knowledge base. For each level, national EMS Education Standards will be developed. Needless to say, increased adoption of the National Scope of Practice Model will facilitate the reporting of comparably defined EMS workers.

There are several sources of estimates of the size of the EMS workforce. The Bureau of Labor Statistics, through their Occupational Employment Statistics (OES) survey, a survey of about 1.2 million non-farm business establishments, reported there were 226,500 EMTs and paramedics and 310,400 firefighters in the nation in 2010. However, this survey does not include volunteers nor does it distinguish between part- and full-time employees. Since 1999, it has been using the Office of Management and Budget (OMB) Standard Occupational Classification (SOC) system, which was recently revised, creating a new category for firefighters (33-2011). This category includes all firefighters and does not estimate the proportion of firefighters who are cross-trained, limiting its value for EMS workforce estimates. The OES also estimates demand for all job categories. They anticipate EMT and paramedic growth to be much faster than average for all occupations. Firefighter growth is expected to be slower than average for all jobs (BLS, 2012).

The Bureau of Labor Statistics also produces workforce estimates through their Current Population Survey (CPS), a monthly survey of households. Occupation is self-identified by the survey respondent. The CPS, which also uses the SOC system, estimated there were 179,000 paid EMTs, paramedics, ambulance drivers, and attendants, 344,000 paid firefighters, and 925,000 paid police in 2007. Although the CPS does collect information on public safety volunteers, the categories used cannot be disaggregated to provide estimates for volunteer EMS workers. Nor can they be used to identify cross-trained firefighters.

The National Association of State EMS Officials' (NASEMSO) collected a variety of data through a survey of 50 State EMS offices and 4 of the 6 territories' EMS offices. Their data indicated the following:

- There are 826,111 credentialed EMS professionals at EMT-B, EMT-I, and Paramedic levels. Nearly two-thirds (64%) are EMT-Basics, 24% are Paramedics, and 6% are EMT-Intermediates. Two-thirds (67%) are male; 70% are between the ages of 20 and 49; three-quarters (75%) are White, 8% are Black, 5% are Asian, and 4% are American Indian/Alaskan Native.
- Over half of the states reported that the majority of First Responders and EMT-Basics are volunteers.
- Fire based EMS has the greatest percentage of EMS professionals.

- There are 19,971 credentialed agencies providing EMS services in the U.S. Over half (51%) function at EMT Basic level, 38% at the Paramedic level, and 9% at EMT-I level.

These numbers, provided by each state's EMS Department, represent their best estimates of the size of their EMS workforces. After contacting each state EMS office by telephone in attempts to collect EMS data, HRSA noted: "It became clear that there is no uniform EMS data collection among the states." Some states collect information about paid or volunteer EMS workers; others do not. Very few report rural or frontier services separately (HRSA, 2006). In some cases, these data may represent the number of licensed individuals, whether or not these individuals are currently employed in EMS. In others, it may represent the number of credentialed individuals. In some cases, "historical" estimates may have been provided, adjusted or unadjusted. The prevalence of 'rounding' – that is, reporting numbers to the nearest hundred or thousand, suggests some data may be estimates. (Reports of 400 and 60,000 EMT-Basics in different states are almost certainly estimates rather than exact counts.) In addition, it is not uncommon for EMS workers to work for more than one agency: The *National EMS Assessment* indicated that in 18 states half or more of their EMS professionals provided services to more than one agency. So, it is not unreasonable to assume that an unknown number of these EMS workers who work in more than one state are counted by each state.

The National Fire Protection Agency (NFPA) regularly selects and surveys a random, stratified sample of agencies in their Needs Assessment Survey. In their most recent survey, 4,660 out of 19,992 agencies (23%) responded. Two-thirds (69%) of the responding departments reported that they performed EMS. Most of those who did not provide EMS services were in rural communities, but even in communities with populations under 2,500, 60% provided EMS services. Within departments providing EMS services, half (48%) reported that only some of their personnel had been formally trained in EMS. But, less than 2% completely lack any certified personnel and 75% report 'all or most' personnel had received formal training (NFPA Needs Assessment, 2011).

NFPA also conducts an annual U.S. Fire Experience Survey and a Fire Service Survey every three years. The former employs a stratified sample of all U.S. fire departments and typically has between 2,500 – 3,500 respondents. The latter survey samples about one-third of the states each year. In 2010, these surveys were used to produce the following estimates:

- There are 1,013,300 firefighters in the nation. Of these, 335,150 (30%) are career and 768,150 (70%) are volunteers.
- Most volunteers are in communities of fewer than 25,000 people.
- There are 30,125 fire departments. Of these, 2,495 are comprised entirely of career employees, 1,860 are comprised mostly of career employees, 5,290 are staffed mostly by volunteers, and 20,480 are all volunteer.
- Nearly half (45%) of the fire departments provide only basic EMS services; 15% provided both basic EMS and ALS; and 40% do not provide EMS support.

- In large cities (over 1 million population), all of the fire services provide both basic life support (BLS) EMS and advanced life support (ALS) EMS. In smaller communities (those with populations under 25,000), less than one-third provide both basic EMS and ALS (Karter & Stein, 2011).

NFPA estimates include volunteers but, they do not define this term for respondents. However, they do not provide estimates of the number of firefighters who provide EMS services. Since this is a survey of fire departments, rather than of individuals, people working for more than one fire department will be double counted. The numbers of individuals trained and licensed to perform EMS services at each EMS level and data about the size of the volunteer workforce, in terms of full-time equivalent (FTE) staff do not appear to be collected by NFPA.

The American Ambulance Association, in its factsheet, reports there are 15,276 ambulance services and 840,669 EMS personnel (American Ambulance Association, 2012). Unfortunately, the source of these data are not indicated.

The National Registry of Emergency Medical Technicians (NREMT) offers national certification based on the NHTSA national standard curriculum for the five levels of EMS workers for which NHTSA has developed curricula: First Responder, EMT–Basic, EMT–Intermediate (1985 edition), EMT–Intermediate (1999 edition), and EMT–Paramedic. First Responders are individuals who receive 40–60 hours of training and can perform CPR, bleeding control, and ventilation. EMT–Basic is generally considered to be the entry level for EMS. They typically receive 110–140 hours of training and perform predominantly non-invasive procedures. The intermediate levels require between 60–400 hours beyond the EMT–Basic level and can perform a few additional non-invasive procedures (such as IV therapy). EMT–Paramedic is normally the highest level of EMT, but some states have advanced paramedic levels. EMT–Paramedics can provide advanced procedures and assessments, to enable them to deal with a wide range of emergencies. Paramedic training typically requires between 800 and 1,200 hours. In the future, the NREMT will be transitioning to national certifications that are based on the *National EMS Scope of Practice Model* and the *EMS Education Agenda for the Future: A System Approach*.

Forty-six states currently use the NREMT exam for certification at one or more EMT levels. As of 2010, the vast majority (91%) of nationally certified EMTs were either EMT–Basics or EMT–Paramedics (NREMT, 2010). See Table 2.

**Table 2. Nationally Registered EMTs, by Level: 2010**

<b>Level</b>	<b>Number</b>	<b>Percent</b>
First Responder	9,666	3.0%
EMT – Basic	220,547	68.6%
EMT – Intermediates	18,708	5.8%
EMT – Paramedic	72,544	22.6%

Note: EMT Intermediates include EMT – Intermediate 85s and EMT – Intermediates 99s.

Since not all states require certification through the NREMT exam, nor do all states require maintenance of certification for licensure, these counts almost certainly underestimate the size of the EMS workforce. The *National EMS Assessment* reported that three states do not require any continuing

education for basics/paramedics; 14 require 1 – 20 hours for basics and two states require 1 – 20 hours for paramedics. As these are below the minimum requirements for maintenance of NREMT certification, it is likely that many EMS workers in these states do not maintain national registration.

Even though we believe the NREMT counts are underestimates of the numbers of EMS workers, it should be noted that a fairly large number of nationally registered EMTs, particularly at the EMT-Basic level, do not become licensed to enable them to work in the profession (Fernandez & Studnek, 2007).

The *National EMS Assessment* indicated that 318,820 EMS professionals were recertified in past 12 months. In most states (63%) EMT-Basic recertification is required every 2 years; in nearly three-quarters (73%) of the states, paramedic recertification is required every 2 years. However, the use of recertification data for estimating the numbers of EMS workers was not advised by the *National EMS Assessment*. “Due to the variability in state data availability, it was not possible to accurately determine the percentage of the total EMS professional population that recertified within the past year” (p. 232). In addition, recertification counts provided by states for EMS workers at different levels (e.g., 1, 16,000, 30,000) suggest estimates.

Since the United States does not have either a centralized licensing body for EMTs, an organization that collects data on all EMT program graduates, or a single source that collects information from or on all EMTs, it is difficult to calculate or project EMT supply. These difficulties are further complicated by the volunteer issue. Tracking only employed EMTs would miss a substantial part of the workforce. Similarly, lack of information quantifying need or demand makes determination of shortages very difficult (Halpern & Renaud, 2010).

As previously noted, the EMS workforce is unique among the health professions in its reliance on a volunteer workforce to provide a substantial proportion of the nation’s EMS services. And, as noted by many, producing good estimates of the size of the volunteer EMS workforce present substantial challenges, not the least of which is the absence of a universal definition of ‘volunteer’. For example, in Sheridan County, Kansas, EMS personnel are classified as ‘volunteer’. They cover 350 – 400 hours of call time/month, for \$1.10/hour. However, other agencies might consider similarly compensated EMS personnel to be a paid workforce.

At the agency level, volunteer classifications are even more idiosyncratic. If a service uses both paid and volunteer EMS workers, the service can classify itself as paid or volunteer. Problems in enumeration of the size of the EMS volunteer workforce also include issues common to enumeration of the overall workforce (employment at more than one organization) as well as issues more idiosyncratic to the volunteer workforce (individuals who are paid to work for one organization may be volunteers at another organization; workloads for volunteers can vary substantially, creating challenges in estimating FTEs).

## **WORKER RETENTION, RECRUITMENT, HEALTH, AND SAFETY**

*Retention.* Retention of EMS workers has been a topic of considerable interest and concern to the profession and is a key factor influencing worker supply. Underlying research into these factors are definitional issues and other concerns that must be addressed to determine whether someone has 'left' the profession. These include:

- Defining a leaver. Career ladder issues need to be considered. EMT-Basics who become paramedics are 'leavers' from the perspective of the EMT-Basic workforce but are new entrants into the paramedic workforce. Similarly, EMS workers who provide direct patient care and then move into management can be considered leavers (from the perspective of care provision) but are still in EMS.
- EMS educators. Like managers, clinical EMS care providers who become educators are no longer direct patient care providers and might be considered leavers. However, they are still required to maintain licensure and might be considered active members of the profession.
- Multiple employers. It is not uncommon for an EMS worker to perform services for more than one EMS organization. Nor is it uncommon for an EMS worker to be paid by one organization and to serve as a volunteer for another organization. If such a person leaves one of these positions but remains in the other, he or she might be labeled a leaver.
- Volunteers. The level of commitment of a volunteer, such as the number of shifts worked, can change substantially over time. Changes in full-time employment status to a lesser status represent a retention issue and are particularly challenging to assess in the volunteer workforce.

Studying retention in EMS workers requires recognition of the heterogeneous nature of the EMS workforce. Issues that are of major importance to fire service EMS workers may be very different from those of concern to EMS-only services. In a similar fashion, many issues important for rural EMS workers are different from those of import to urban workers; factors important to volunteers can be quite different from those important to paid EMS workers. And, factors important for the retention and recruitment of EMS educators and managers are almost certainly different from those that are important for EMS workers engaged in the direct provision of patient care.

A survey of 1,008 EMTs in Montana indicated that 9% were considering leaving the profession in the next year and nearly one-quarter were considering leaving in next 5 years. The most experienced were most likely to consider leaving, with nearly half (47%) citing retirement as a factor in their decision (Perkins et al., 2009). These rates are comparable to a 10.7% attrition rate estimated in a convenience sample of 40 agencies. In this sample the attrition rate for all-volunteer services (12.4%) was greater than the rates for mixed services (12.3%) and all-paid services (10.2%) (Patterson et al., 2010).

*Working conditions.* Some of the best information on EMS working conditions associated with retention has been produced through the Longitudinal EMS Attributes and Demographic Study (LEADS), a series of annual surveys conducted by the NREMT with analytic support provided by NHTSA,. These surveys have shown that EMT-Basics and Paramedics are dissatisfied with different aspects of job,

including pay, benefits, opportunities for advancement, and work schedule (Brown et al., 2003; Patterson et al., 2005). Dissatisfaction will have a negative impact on retention (Patterson et al., 2005).

Another LEADS-based study presents findings from the third cross-sectional (snapshot) survey which focused on compensation, benefits, and satisfaction. Most EMTs (62%) and paramedics (57%) stated that their retirement incomes were not adequate to meet their financial needs. About one-third of the respondents were not satisfied with their employee benefits (35% EMT and 30% paramedics). Many EMTs (36%) and paramedics (46%) were also dissatisfied with the level of recognition from their employer (Brown, Dawson & Levine, 2003). Nonetheless, it should be noted that EMS workers report high overall satisfaction with a number of different aspects of their work. Over 90% of EMTs indicated satisfaction with current assignment, satisfaction with the profession, satisfaction with being able to perform a variety of tasks in different situations, and satisfaction with being able to work without close supervision (Patterson, Freeman, Moore, and Slifkin, 2007).

The JEMS 2011 Salary and Workplace Survey, a survey of 281 agencies (out of a sample of 2,599) provides estimates of prevalence of various benefits offered by EMS employers. Nearly all (95%) of the agencies offer major medical, and 92% pay all or part of the costs of this insurance. Ninety-one percent offer life insurance and 63% pay all or part of the costs. Eighty percent provide a retirement plan, to which 58% of the agencies make some contribution. However, levels of contributions to all of these benefits by the agency have been declining, reflecting the fact that over half (56%) of the agencies report a decrease in their current year's operating budget (Greene & Wright, 2011).

Poor management has been identified as a problem for both recruitment and retention. There is a perceived shortage of rural EMS personnel with appropriate managerial training to handle organizational needs (Renaissance Resources, 2005). High-quality EMS management has been identified as a significant component of effective recruitment and retention, but this relationship has rarely been tested empirically.

Recent National Association of EMTs (NAEMT) surveys verify that recruitment and retention remain among their members' top concerns (Moore, 2007). This is consistent with other data provided by the annual JEMS Salary and Workplace Survey. The 2011 JEMS Survey indicated that EMT-Basic positions are readily filled over 80% of the time, but nearly half (44%) of the respondents reported that "There is a shortage of paramedics available to hire." (Greene & Wright, 2011).

Relationships between dissatisfaction and attrition are complex. An analysis of LEADS 2005 survey data indicated that even though EMT-Basic and paramedic satisfaction was lowest for opportunities for advancement and pay and benefits, these levels of dissatisfaction were not significantly associated with intent to leave their job. Significant relationships were noted with personal health, level (that is, EMT-Basics were more likely to leave than paramedics), and type of EMS work (Patterson et al., 2009). The LEADS survey of EMT-Basics and paramedics who had left the field indicated that their main reason for leaving EMS was feeling stressed and burned-out and the perception of a lack of job challenges. The desire for better pay and benefits was the least important factor of those listed in the survey (Blau & Chapman, 2011).

*Occupational commitment.* Models and scales of occupational commitment have been developed to assist with the identification of factors associated with retention. Blau's occupational commitment scales provide measures of four types of commitment as well as an overall score. These types of occupational commitment are:

- Affective (one's emotional attachment to the occupation)
- Normative (an individual's sense of obligation to remain in the occupation)
- Accumulated costs (the time and other costs invested in the occupation), and
- Limited alternatives (options for other types of work for individuals).

Not surprisingly, limited alternatives were related to level of education, with limited alternative commitment lowest for those with graduate degrees, intermediate for those with undergraduate degrees, and highest for certificate program graduates (Alexander et al., 2009).

Survey data indicated that affective and limited alternatives commitment were significantly correlated with probable retention; EMS workers with low overall levels of commitment were more likely to report probable departure from the field (Blau et al., 2009). There were no differences between EMS workers in the fire service in comparison to other EMS workers, but there were significant increases in affective and normative commitment as a function of age (Alexander et al., 2009).

*Volunteers.* Workforce issues facing volunteer systems can be quite different from those facing paid systems. An expert panel, convened by HRSA, identified the major challenges facing volunteer systems as including:

- Volunteer availability
- Aging volunteer workforce
- Impacts of National Standards and testing
- Challenges at primary workplace (e.g., employers not allowing volunteers to leave work), and
- Maintaining skills in low volume services (e.g., in Nebraska, 15% of squads responded to 25 or fewer calls in last 12 months) (HRSA, 2006).

Using data from the LEADS surveys, it was shown that the reasons for entering EMS for volunteers and non-volunteers were significantly different for all areas that were viewed as important programmatically for volunteers. It was also observed that the percentage of workforce that is volunteers increases as community size decreases (Patterson et al., 2007).

Retention issues are likely to be different for paid and volunteer EMS workers. Volunteer EMTs are more likely to be satisfied with recognition received, job freedom, and impact on family life. Conversely, they are more dissatisfied than paid EMTs with their days off schedule and the stress of responsibilities that differed from their expectations (Blau et al., 2011).

Workforce factors (such as certification level, whether one is a paid employee or a volunteer, region, and working conditions) must all be considered in recruitment and retention. In Nebraska, surveys of 274 ambulance service managers, 554 current crew members, 345 retired crew members,



and 204 EMS students helped to demonstrate that recruitment and retention were major issues of concern. The major reasons for leaving volunteer service were the time commitment, training requirements, age, shortage of personnel for back up, and lack of leadership. Sources of dissatisfaction for current members were the amount of local funding, professional respect from nurses, and a belief that there were sufficient local EMS workers. Current staff felt retention would benefit from fewer requirements to maintain credentials, more benefits, higher quality EMS continuing education, and better teamwork (Ullrich et al., 2004).

*Recruitment.* Recruitment is key to ensuring an adequate supply of EMS workers for the future. Several studies have investigated reasons for entering the profession, both in general and a function of individual characteristics. In the aforementioned series of surveys in Nebraska, the most important reasons for EMS career choice were satisfaction with helping others, community need, interest in emergency medical/trauma care, and the challenge of providing emergency care (Ullrich et al., 2004).

In addition to quantifying the importance of different factors in EMS career choice, LEADS data have indicated that the relative importance of these factors differs as a function of community size. In very small communities, enjoying the opportunity of being able to provide medical care to people in need of assistance was a more important reason for entering the profession than in other, larger communities. Conversely, wanting an exciting job, choosing EMS as an opportunity for new career/seeing if one wanted to pursue another health career opportunity, wanting a job with good pay and benefits, and choosing EMS because it was a job requirement or incentives at one's job were all significantly less important reasons in smaller communities. It was also noted that rural EMS workers were older, more likely to be female, less likely to be minority, more likely to be Basics, and more likely to be volunteers (Patterson et al., 2007).

*Health and safety.* Research in a number of specific health and safety issues of concern to the profession has been and is being undertaken. These issues can directly impact the supply of EMS workers and include topics such as sleep/fatigue, obesity, back problems, hearing problems, smoking, Post-Traumatic Stress Disorder, vaccinations, exposure to pathogens, and injuries.

*Sleep/fatigue.* The requirements for 24-hour coverage along with the physical demands of the profession may be causally related to the prevalence of sleep problems and fatigue among EMS workers. The LEADS surveys, over the period 1999-2004, indicated that over one-sixth (16%) of nationally registered EMT-Basics and almost one-third (32%) of nationally registered paramedics reported sleeping problems in the past year. A LEADS survey snapshot focusing on sleep problems further indicated the prevalence of excessive daytime sleepiness among working EMTs to be 36%, as measured by the Epworth Sleepiness Scale (ESS), a validated sleep medicine tool. More seriously, these levels of sleepiness were associated with negative impacts on performance: 76% of the excessively sleepy individuals reported difficulty operating emergency vehicles for short distances, 76% reported difficulty operating emergency vehicles for long distances, and 65% had difficulty remembering EMS protocols. They were also less satisfied with their work. Six percent of the working EMTs had ESS scores greater than 16, a level at which commercial vehicle drivers would be taken out of service for immediate evaluation (Pirrallo et al., 2012).

Other researchers have come to similar conclusions: Sleep quality and fatigue status of EMS workers are at unhealthy levels. Using different sleep scales (the Pittsburgh Sleep Quality Index (PSQI) and Chalder Fatigue Questionnaire (CFQ)), they noted PSQI scores of EMS workers were substantially higher than other people's, approaching levels seen in clinically depressed patients and worse than patients receiving chemotherapy. CFQ scores indicating fatigue were reported in 45% of a sample of EMS workers (Patterson, Suffoletto, et al., 2010). Unfortunately, less than one-third of EMS agencies have a formal policy or plan for fatigue management (Fitch & Associates/Greene & Wright, 2011).

To deal with these concerns, EMS staffing system modifications have been proposed and are being investigated. A modified system allotted time for naps in the course of EMS workers' shifts. Physiological and reaction time measures suggested that these restful power naps alleviated fatigue and improved physiological function. However, to enable these naps, staffing increases were required (Takeyama et al., 2009).

*Obesity.* Given the physical demands of EMS, there is a clear and obvious need for EMS workers to be physically fit. However, obesity seems exceedingly prevalent. In Massachusetts, over three quarters (77%) of a sample of candidates for emergency responder positions were overweight and one third (33%) were obese. Not unexpectedly, higher body mass indexes (BMIs) were associated with higher blood pressures, worse metabolic profiles, and lower exercise tolerance. The long term health consequences of excessive weight represent a serious concern for the workforce and potentially threaten the health and safety of colleagues and patients receiving care (Tsismenakis et al., 2009).

Candidates for reregistration at the National Registry of EMTs are invited to complete brief surveys. Among recertified EMTs, only one quarter (26%) reported heights and weights that translated into BMIs in the normal range. This is slightly worse than the general population. It was observed that BMI was related to gender, with 50% of the female EMTs but only 21% of males reporting heights and weights that would put them in the normal BMI range. BMI was related to self-assessment of health: 66% of respondents who reported their overall health was 'fair' or 'poor' were obese, while only 12% reporting excellent health were obese. Obesity rates were also related to level, with rates highest for paramedics, intermediate for EMT-Intermediates, and lowest for EMT-Basics. Obesity rates were lowest for EMTs serving in the military and highest for those working for county services. In addition, three-quarters (75%) did not meet CDC recommendations for physical activity. (Studnek et al., 2010b.)

*Back problems.* With the amount of lifting and transport performed by EMS workers, it is not surprising that many suffer from back problems. Over half (51%) of currently employed nationally registered EMTs reported experiencing one or more days of pain in their back or legs in the last two weeks. The prevalence of this pain was related to service type (greater in private EMS services than in Fire/EMS) and more likely to be reported by females. Pain was also related to satisfaction with profession, suggesting that there are indirect ways in which physical pain can have a negative impact on retention (Studnek et al., 2010a).

Among privately employed EMS personnel, the Bureau of Labor Statistics Survey of Occupational Illness and Injury data identified that 61% of 'days absent from work' injuries were due to a sprain or strain. It is noteworthy that over one-third (34%) of these injuries affected the back (cited in Reichard and Jackson, 2010).

*Hearing.* EMTs are exposed to a variety of noises, such as sirens, hydraulic tools, power generators, etc., in the course of performance of their work duties. Nearly one sixth (15%) of employed, nationally registered EMTs reported experiencing hearing problems in the previous year. These hearing problems were shown to be related to lifetime occupational noise exposure, large community size, and minority status. Interestingly, they are also associated with back problems (Fernandez et al., 2010).

Overall, the literature on impacts of occupational exposure on hearing for EMS workers is inconsistent. But, newer research tends to support that there is a greater risk of hearing loss in firefighters (Hong and Samo, 2007; Ide, 2008; Hong et al., 2008; in Fernandez et al., 2010). There are ways of dealing with excessive noise. However, only 21% of EMS workers report the use of hearing protection, even though two thirds of them say this hearing protection does NOT interfere with communication (Fernandez et al., 2010).

*Smoking.* One sixth (17%) of nationally registered EMTs are current smokers, with females more likely to report being smokers than males (Studnek et al., 2010b.) Although the overall rate of smoking is slightly less than the national average (19.3% of all adults), in the United States cigarette smoking is more common among men (21.5%) than women (17.3%). The increased incidence among female EMS workers poses threats to a group that is underrepresented in the EMS workforce.

*Post-Traumatic Stress Disorder.* Among EMS workers, exposure to traumatic events is nearly universal (80 – 100% of EMTs). These exposures are undoubtedly stressful and may contribute to a number of problems, including Post-Traumatic Stress Disorder (PTSD). Several researchers have reported PTSD rates greater than 20% in this population, with high risk alcohol and drug use rates being reported (by some) to approach 40% (Donnelly & Siebert, 2009). However, such findings have not been confirmed by others. In a recent survey of Hawaiian EMS workers, only 4% (of a sample of 105) met clinical PTSD diagnostic criteria (Mishra et al., 2010). In a recent literature review, reports of prevalence of PTSD in police, fire, and emergency services workers ranged from 6% – 32%. The prevalence of PTSD was usually less than found in the patients, but somewhat higher than the prevalence of PTSD in the overall community (McFarlane, Williamson, & Barton, 2009).

Comparisons of PTSD rates for EMTs and paramedics with the general population must be made cautiously. Vigorous recruitment standards for paid EMS workers, in terms of physical health and psychological resilience, are common. Self-selection among volunteers can effectively screen out many at-risk individuals. In general, PTSD research has focused on individuals exposed to a single traumatic event. This is very different from the repeated exposures to personal threats and the emotions associated with not infrequent dealings with the seriously injured, the seriously ill, and recently deceased adults and children.

In their review of the literature, McFarlane et al. (2009) commented that the lack of scientific literature dealing with PTSD and its longitudinal course in the EMS populations, as well as its treatment, was surprising. They further noted a high rate of misdiagnosis of PTSD in civilian settings. Nonetheless, they recommended annual screening for those at risk.

*Vaccination rates.* The flu vaccination rate for adults 18–49 years, the age group that comprises the vast majority of EMS workers, was 30% for the 2010–11 season (CDC, 2012). Among health care

professionals, flu vaccination rates (in 2007) were 42% (National Foundation for Infectious Diseases, 2008). Although some EMS researchers reported low vaccination rates (13%), as was reported through a 2005-2006 survey of Rochester EMS professionals (Rueckmann, Shah, & Humiston, 2009), more recent research indicates flu vaccination rates that exceed the mean for similar adult populations. A survey of North Carolina EMS professionals in the 2007-2008 flu season indicated a 48% vaccination rate in the previous year (Hubble, Zontek, & Richards, 2011); LEADS survey data indicated a vaccination rate of 59% among working EMTs (Barnett et al., 2009).

Numerous factors are associated with an increased likelihood of getting a flu shot. Barnett et al. (2011) indicated that older EMS workers (over 36 years of age) were more likely to get vaccinated. Employer practices and policies, such as flu training, vaccination recommendations, and employer offered vaccinations were associated with increased likelihood of vaccinations (Rueckmann, Shah, & Humiston, 2009; Hubble, Zontek, & Richards, 2011). Similar positive associations were noted with beliefs in vaccine safety and vaccine effectiveness (Hubble, Zontek, & Richards, 2011).

*Work-related pathogen exposure.* Exposure to flu is one of many exposure risks for EMS workers. In one urban EMS system, there were 397 exposure reports over a three year period (2007 – 2009), resulting in an exposure rate of 1.2/1,000 EMS incidents. The most common exposures were to meningitis (33%), TB (17%), and viral respiratory infections (15%). Of these exposures, only 6 cases were the result of needlestick accidents.

These reported rates are probably overestimates: Not all of these reports were ‘true’ exposures. Only 84% were considered to be true exposure, and only 53% of these were confirmed exposures. Half of the exposures only required follow-up with an infection control officer; 32% required follow-up at an occupational health center or Emergency Department. Just 23 (18%) required treatment (El Sayed, Kue, McNil, & Dyer, 2011).

Exposures to Methicillin-Resistant Staphylococcus aureus (MRSA) are becoming a serious concern. The Los Angeles Fire Department reported 136 medical claims of MRSA infection, with five hospitalizations from 2003 – 2005 (Williams, 2006). Sampling at fire-related facilities clearly indicates that patient exposure is not the only source of exposure to pathogens. Out of 500 samples taken at nine fire-related facilities in Tucson, Arizona, Staphylococcus aureus was isolated from 11% of the samples. Twenty percent of the couches and classroom desks sampled were contaminated with Staphylococcus aureus, 65% of which was MRSA. During the study, MRSA cases were reported by 15 Tucson firefighters, eight of whom required medical leave (Sexton and Reynolds, 2010). Similarly, in a sample of Seattle fire stations, 4% of surfaces tested at fire stations were MRSA positive and 22.5% of fire fighter nasal swabs were MRSA positive. These rates exceed the 5 – 10% rates generally observed in health care workers and rates of less than 2% in the general population (Roberts et al., 2011).

In addition to MRSA, other pathogens are common in fire-related facilities. Fecal coliforms were detected in 100% of locker room samples, 90% of couches, and 70% of class desks (Sexton & Reynolds, 2010).

*Injury rates.* EMS has been called “The Most Dangerous Job” (Page, 2011). Although there have been numerous studies of injury rates, the current state of EMS workforce data makes estimation of

cross-occupational injury rate comparisons very challenging. Comparisons with other professions are difficult to make and must be presented with caution. Reichard and Jackson (2010) used several data sources to produce estimates of injury rates for firefighters, EMS workers, and police officers. Using the Bureau of Labor Statistics' Survey of Occupational Injuries and Illnesses (SOII) data for 2007, they noted there were 4,560 EMT injuries and illnesses involving 'days off from work' (DAFW) for EMTs, 90 among firefighters, and 150 among police officers. However, the SOII collects data for private industry only and excludes volunteers. Most firefighters and police officers were excluded as they are public employees.

The National Institute for Occupational Safety and Health (NIOSH) uses a supplement to the National Electronic Injury Surveillance System (NEISS-Work) to measure all work-related injuries and illnesses treated in an Emergency Department. (The vast majority of cases (90 – 95%) in the NEISS-Work supplement are injuries rather than illness.) NEISS-Work data, taken from a sample of 67 U.S. hospitals in 2000 and 2001, were used to calculate injury rates. Injury rates were calculated by dividing the number of injuries by the size of the population. Their major challenge for calculating rates was the choice of a denominator representing the number of EMS workers.

Estimates of the EMS workforce (the denominator) were produced in two different ways: (1) the number of certified EMT personnel (as provided by Maguire and Walz, 2004) or (2) the number of paid EMS personnel from the Occupation and Employment Survey supplemented by the estimated number of volunteers from the *EMS Workforce for the 21<sup>st</sup> Century: A National Assessment*. Comparable estimates of the firefighter workforce were produced for career firefighters in terms of FTEs and counts from Current Population Survey (CPS) microdata files, the Occupational Employment Survey (OES) data (with and without adjustments to exclude fire inspectors and investigators), and data collected by the National Fire Prevention Association (NFPA). NFPA data were also used to produce separate estimates for volunteer firefighters and all firefighters (career and volunteer combined). CPS data were used to produce FTE estimates for law enforcement; count estimates were produced from CPS and OES data respectively. The CPS count data were adjusted for law enforcement by excluding an estimated 14.4% to eliminate detectives, bailiffs, game wardens, and others not generally considered as EMS responders. The injury rates, as a function of different workforce size estimates for EMS workers, firefighters, and public safety workers are provided in the table below.

**Table 3. Injury rates for EMS Workers, Firefighters, and Law Enforcement Workers**

Group	Data Source	Rate/100 workers
All EMS	Certified EMTs	3.0
All EMS	OES/NHTSA	4.9
Career firefighters	CPS	9.2
Career firefighters	OES	8.2
Career firefighters	NFPA	9.1
Volunteer firefighters	NFPA	1.3
All firefighters	NFPA	3.5
Police/sheriff/transit	CPS	8.8
Police/sheriff/transit	OES	9.2

Source: Reichard, A. & Jackson, L. (2010). *Occupational Injuries Among Emergency Responders*. American Journal of Industrial Medicine, 53, 1-11.

It should be noted that the above rates are per 100 workers. For some groups, rates would probably be very different if they were presented in terms of 100 full-time equivalent (FTE) workers. Comparisons of injury rates, on a per person basis, must be made cautiously, given the large proportion of EMTs who are volunteers and are not working full-time. Clearly, EMS workers are at risk; clearly injury is a concern. Overall, EMS and firefighter rates are double the general worker rates, but as Reichard and Jackson point out, comparisons must be made with caution due to lack of volunteer and secondary job data. Without better data about the number of EMS workers and the hours that they work, claims that EMS is 'the most dangerous job' are difficult to support scientifically.

Injury rates can also be estimated from workers' compensation data. Using such data, complemented with employee counts from the Department of Public Safety, for one urban area for 2005 – 2007, EMS had higher rates of "lost-time" and "medical evaluation" injuries than either firefighters or police. Injury rates, in terms of lost time per person-year of exposure were .201 for EMS, .077 for fire, and .072 for police. In terms of injuries requiring medical evaluation, EMS rates were also higher (.258) than for fire (.094) or police (.126) (Suyama et al., 2009).

Using work injury reports from two agencies, Maguire et al. (2005) reported an annual rate of job related injury rate of 34.6/100 FTE EMS workers per year. Given the small number of agencies, the fact that these providers were fully compensated employees (that is, no volunteers), and the fact that these injuries may not have required time lost from work or medical attention, generalizing from this study to the universe of EMS workers or comparing with injury rates defined in other ways may not be appropriate.

Injury rates based on treatment in an Emergency Department or on workers' compensation data are much lower than injury rates reported by EMTs in surveys. Not all injuries require treatment in the ED nor do they require completion of workers' compensation claims. In a recent survey of nationally registered EMTs, 30% of 659 providers reported an occupational injury (including physical assault, which was reported by 23% of respondents) in the past 12 months. Additionally, 64% reported more than one injury. It was noted that paid EMS workers were more than 2.15 times likely than volunteers to report an injury in the past 12 months, even when gender and call volume were controlled for (Heick, Young, and Peek-Asa, 2009). Similar levels were reported in a recent survey: In the past 3 months, 16% of EMS worker respondents reported an injury (Weaver et al., 2012). LEADS survey data indicated that, from 1999-2005, there were 8.1 injuries resulting in lost workdays per 100 EMT-Basics and paramedics (Studnek et al., 2007). LEADS data, however, only reflect injuries resulting in lost workdays rather than any injury.

*Types of injuries.* EMS injuries requiring treatment in the ED were most frequently classified as sprains and strains (41%) and contusions/abrasions (13%). The sources of these injuries were body motions (39%), harmful exposure (21%), contact with objects/equipment (16%), and transportation incidents (10%) (Reichard and Jackson, 2010). Once again, it should be noted that these data refer to injuries treated in the ED and that such injuries amount to only 34% of work-related injuries (CDC, 1998, cited in article).

Workers' compensation data indicate the most prevalent kind of EMS injury is 'minor trauma'. But, in comparison to fire and police, the incidence of blood-borne pathogen exposure was substantially higher for EMS (Suyama et al., 2009).

*Policies and practices to reduce injuries.* Efforts to reduce EMS injuries through employer policies and practices can be effective. Through a survey of 416 people in 21 National EMS Management Association (NEMSMA) member agencies, involving the use of the EMS Safety Attitudes Questionnaire (EMS-SAQ) to measure workplace safety culture and the EMS Safety Inventory (EMS-SI) to measure self-reported safety outcomes, it was shown that a culture of safety was related to lower rates of injuries, fewer medical errors/adverse events, and fewer feelings of compromised person or patient safety. Injury rates were associated with job satisfaction, teamwork climate, and perceptions of management. Injuries were associated with age, and more likely to occur in younger EMS workers.

Medical errors/adverse events were also more prevalent in younger EMS workers and in paramedics (in comparison with EMT-Basics). Overall, safety-compromising behaviors (e.g., involvement in collisions; reporting to work without adequate rest beforehand, feeling overly stressed during a shift) were reported by nearly all (89%) of respondents, and more likely to be reported by younger providers, paramedics, and full-time employees (Weaver et al., 2012).

*Fatalities.* The Bureau of Labor Statistics' National Census of Fatal Occupational Injuries (CFOI) indicated that there were 13 EMT deaths, 51 firefighter deaths, and 146 police officer deaths in 2007. These data do not include volunteers (BLS, 2008). Slightly different statistics were produced by the National Fire Protection Association (NFPA) for the same year: 30 of 57 firefighters who suffered injury-related deaths that year were volunteers (Fahy, LeBlanc, & Molis, 2008).

*Needlesticks.* Needlesticks represent a type of injury/exposure of concern to the profession, as they represent a possible source of serious pathogen exposure. Some states are beginning to monitor this (Mears et al., 2011).

In a mail survey of paramedics, nearly 7% reported a needlestick in the past year. Not surprisingly, the likelihood of needlestick was a function of call volume. Likelihood was also a function of age, being more likely for EMS workers over the age of 30. This survey was able to identify management practices associated with decreased risk. Supervisors speaking with staff about their failure to follow Universal Precautions and including safety procedures as part of staff's job evaluation were associated with decreased risk. Furthermore, the effect of these practices was greater than always being provided with safety devices (Leiss, 2010).

*Seat belts.* Seat belt use is a risk behavior that appears to be sensitive to organization policy. Among EMS workers, 87% indicated that, when at work, they either "Always wear it" or that the "Last time not worn [was] a year ago or more". EMT-Basics were more likely to use their seat belts than paramedics and EMS workers in rural area and small towns are less likely to use seat belts. EMS workers in organizations with seat belt use policies were more likely to report high levels of seat belt use (Studnek & Ferketich, 2007).

## EMS EDUCATION

EMS education, from a workforce perspective, is important in determining the supply of trained and skilled EMS workers. In previous literature reviews, we reviewed more than 30 papers related to the education and training of EMTs and paramedics (Levine & Chapman, 2009). Most were about specific types of training or components of training programs. Several papers focused on skills needed to treat pediatric patients, and the need for continuing education to maintain skills and a comfort level in treating pediatric patients (Stevens, 2005; Glaeser et al., 2000; Miller et al., 2004). Others focused on EMTs' knowledge of procedures such as aspirin use, wound care, intraosseous infusion, infectious disease, and domestic violence (Funk, 2000; Hale, 2000; Anderson et al., 1994, Mencl, 2000; Weiss et al., 2000).

A recent British article raised questions on the adequacy of training for procedures which are rarely performed by EMS workers, such as intubations. Highly technical and rarely performed complex skills are subject to skill fade. Of 269 paramedics, 128 (48%) did not perform an intubation in last 12 months. The median (most frequently reported) number of intubations performed by a paramedic in the past 12 months was one. They noted that the success rate of tracheal intubation attempts was 84%, and that this rate was significantly associated with number of patients intubated (Deakin, King, and Thompson, 2009). Analyses of the NEMSIS data base have indicated overall prehospital endotracheal intubation success rates of 77% (Wang et al., 2011), substantially lower than rates observed when performed in hospital Emergency Departments (Stevenson et al., 2007). NEMSIS data indicated regional differences in success rate, but these findings must be interpreted cautiously as 75% of the data came from only three states (Wang et al., 2011).

It has been widely reported that training opportunities are more restricted in rural areas than other areas: training sites are often distant, patient volume is lower, and distance education and supervision opportunities are limited (Becknell & Ostrow, 2002). Rural education program data are less likely to be reported in national data sets because these programs are mostly offered by local providers who are not obligated to report these data to official agencies.

*Training program enrollment.* The Integrated Postsecondary Education Data System (IPEDS) is a data collection program sponsored by the U.S. Department of Education's National Center for Education Statistics. IPEDS collects data on all institutions that receive Title IV funding. It focuses on those institutions that (1) have been certified eligible to participate in Title IV programs, (2) grant associate's or higher degrees, and (3) are within the 50 states and the District of Columbia. Although most of the community college programs are Title IV eligible, few of the EMS programs, particularly EMT programs in non-academic settings will be captured in the IPEDS data set. Most EMS educational programs (61 percent) occur in non-academic settings. Of the 39 percent that are offered in academic settings, the most prevalent setting is the community college. Community colleges house 22 percent of the EMT–Basic and 42 percent of the EMT–Paramedic programs (Ruple, Frazer & Bake, 2006). Less than 5 percent of the EMS educator respondents teach at four-year colleges or universities (Ruple, 2007). This diversity of training locations creates challenges in estimating the numbers and types of EMTs enrolled in training programs, hindering the ability of the EMS industry to accurately assess the future supply of workers.



Unfortunately, IPEDS does not distinguish between EMT–Basic and EMT–Paramedic programs. IPEDS classifies programs using the *Classification of Instructional Programs (CIP)*, which uses a combined code for EMT-Basic and Paramedic programs. In 2007, 880 completers were emergency care attendants and 21,055 were “EMT paramedics”. However, “EMT Paramedics”, as previously mentioned, almost certainly include EMT-Basics. In 2007, the National Registry of Emergency Medical Technicians (NREMT) reported that only 8,471 individuals successfully completed the requirements for NREMT certification.

Most (79%), but not all, EMS educators report that they have to have state EMS educator certification to teach. Nearly all also report they also have to maintain their health care provider certification. However, continuing education concerned with pedagogy is not a requirement. Their pedagogy is heavily based on the U.S. Department of Transportation – National Standard Curriculum (DOT NSC). Almost all (98%) use the NSC either on a “word for word” or “as needed” basis (Ruple et al., 2006).

The use of EMS training data as an indicator of EMS supply poses further challenges. Completion of an EMT education program, with subsequent NREMT national certification, is not an infallible indicator that an individual is interested in a job as an EMT. A survey of 203 EMT students in the Chicago area indicated that 5 percent of the students did not plan to use their licenses, and 65 percent said they wanted to work for fire departments (Deluhery et al., 2008). (Many fire departments require licensure as a precondition for employment.) Fernandez and Studnek (2007) similarly noted that, immediately after program completion, about 5 percent of EMT–Basic students said they did not intend to practice. However, about two-thirds of the program graduates were not working in EMS three months after graduation, and 20 percent of these graduates indicated they were not looking for a job in EMS.

*Education program accreditation.* An alternative source of information about EMT training programs is the American Medical Association’s (AMA) Health Professions Education Data Book. This is restricted to paramedic programs that are accredited by the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP) and those that chose to respond to an AMA survey. Dickison and colleagues analyzed data for over 12,000 candidates for the NREMT paramedic exam during 2002 (Dickison et al., 2006). They found that students who attended an accredited program were about 1.5 times more likely to pass the certification exam.

A two-part national study of educators and the education process was connected with the development of the *EMS Education Agenda for the Future: A Systems Approach*. In the first phase, a survey was conducted on a nationwide sample of EMS educators, as part of the State of EMS Education Research Project (SEERP) (Ruple et al., 2005). The pool of 1,691 respondents was considered adequate to generalize to 15,000 known educators. In the second phase of the study, an expert panel was used to identify common practices in EMS education derived from the data analysis in phase one. This group identified the most important concepts in EMS. Among those identified were needs to increase theory, to enhance teaching skills, to improve evaluation procedures to assess student performance, and to build alliances with professional accrediting services (Ruple et al., 2006). These goals are part of *EMS Education Agenda for the Future: A System Approach*, which advocates for the goals to be addressed by EMS education programs around the country.

The *EMS Education Agenda for the Future: A Systems Approach* requests that all states adopt National EMS Certification and National EMS Program Accreditation. The Commission on Accreditation of Allied Health Education Programs (CAAHEP) is the accrediting body for EMS paramedic programs in conjunction with its' Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP). To further support this accreditation effort, the NREMT will make graduation from a CoAEMSP accredited program an eligibility requirement for NREMT paramedic testing as of December 31, 2012 (Cason & Robinson, 2011). As of March 17, 2012, there were 285 CAAHEP accredited paramedic programs in the country. It is anticipated that accreditation reporting requirements will enable the production of future accurate estimates of the numbers of paramedics trained.

Accreditation issues for EMS workers at levels below the paramedic level are the subject of continuing discussion, as are practices and procedures for dealing with currently trained, certified, and licensed EMS workers. It is anticipated that Advanced EMTs (AEMTs) will have clinical and field experience requirements. EMT-Intermediate 85s and 99s (from the National Standard Curriculum levels released in those years) will probably transition to the newer AEMT and paramedic levels, respectively, without additional training requirements. But, additional evaluation and discussion are on-going (Casson & Robinson, 2011). And, in the absence of accreditation requirements, counting the number of EMTs being trained below the level of paramedic remains challenging.

## **PROJECTING DEMAND: PREPAREDNESS, OUTCOMES BASED RESEARCH, AND THE PATIENT PROTECTION AND AFFORDABLE CARE ACT (ACA)**

*Disaster preparedness.* Disaster preparedness is a component that impacts EMS workforce demand and need. It makes salient issues of need vs. demand: In planning for an EMS system, staffing levels sufficient to meet 'normal' demand may prove inadequate for mass casualty incidents or other disasters. Conversely, the cost of a system whose capacity greatly exceeds normal demand represents an inefficient use of resources. Arguably, disaster preparedness may include supply components, as different policies and practices can influence the numbers of trained EMS workers willing and able to respond in different disaster scenarios. Clearly, disasters will increase the need and demand for EMS workers. However, EMS workers must be trained in dealing with disaster situations and barriers to reporting to work in situations where one's health and one's family's health might be threatened need to be addressed.

Although disaster preparedness is a common topic in health policy and EMS, training in disaster preparedness is generally not required for maintenance of EMS certification. O'Keefe and Levine (2004), in a 2004 study, noted that in the years since 9/11, a majority of EMTs received less than 1 hour of training in Chemical, Biological, and Explosive (CBE) hazards. Twenty percent of EMTs had received no training since 2001. More recently, in a large Midwestern metropolitan area, almost 25% received no training in Biological, Chemical, Nuclear (BCN) or other mass casualty events (Chaput et al., 2007).

The amount of preparedness training has increased somewhat over time. In the 2008 NREMT reregistration survey, 91% of respondents reported at least 1 hour of disaster preparedness training in the last 2 years. Paramedics, fire service EMS workers, military EMS workers, and EMS workers in large communities were more likely to receive this kind of training. More specifically, 55% of respondents participated in multi-agency disaster drills, but only 44% participated in drills involving explosive materials/structural collapse, a type of disaster that many believe is more likely than a biological, chemical, or nuclear event. About 40% of reregistering EMT respondents had not participated in any multi-agency disaster drills in previous 24 months. In addition, perceptions of preparedness were significantly related to hours of training (Fernandez et al., 2011).

These data are consistent with the *2011 EMS National Assessment's* findings about preparedness:

- Even though all state EMS offices are involved in disaster preparedness programs, only a small portion of the federal disaster preparedness funds reach EMS operationally
- Only 7 states require local agencies to hold or participate in mass casualty exercises.

Pandemic flu preparedness is another component of disaster preparedness. A recent research study called "Will First-Responders Show Up for Work During a Pandemic? Lessons from a Smallpox Vaccination Survey of Paramedics" asked paramedics about their likelihood of remaining on duty under a variety of conditions (such as the availability of vaccinations for themselves, for their families, and the availability of protective gear (Mackler, Wilkerson & Cinti, 2007). It was concluded that a significant number of paramedics would not be willing to remain on duty in a pandemic. In a more recent study,

93% of EMS workers reported they would be willing to report to work if required – but a majority (52%) of EMS workers would stay at home if a risk of disease transmission to family members was perceived. Beliefs of high threat/high efficacy (that is, that the situation was a major threat to the community and that their actions would be very effective in dealing with the situation) substantially increases likelihood of reporting for work if asked but not required (Barnett et al., 2011).

*The role of the EMS worker.* Changing the roles of EMS workers can impact both supply and demand. In the *National EMS Assessment*, about half of the state survey respondents reported their states allow EMS to work in non-EMS roles (e.g., hospitals, etc.) Some states also allow EMS involvement in injury prevention programs and practices.

There is a strong desire among EMS workers to provide additional health services. All of the respondents agreed that EMS should develop and implement EMS wellness initiatives. This involvement in disease prevention activities was also strongly desired by respondents to the NREMT 2006 reregistration survey: 83% felt EMS professionals should participate in disease prevention activities. About one third (34%) of the respondents reported that had participated in disease prevention activities. Respondents with advanced degrees, those who had been working in EMS more than 21 years, those in the military, and those responding to zero emergency calls in a typical week were most likely to have engaged in these activities. In addition, over half (51%) of the respondents felt prevention services should be provided during 911 calls and 8% had done so (Lerner, Fernandez, & Shah, 2009).

*Outcomes based research.* Key elements for projecting need are strong, objective measures of the impacts of the delivery of EMS services. Such research has been sorely lacking. To address this, as well as other issues, the National Emergency Medical Services Information System (NEMSIS) has been created. It can potentially store EMS data from every state in the nation. NEMSIS's databases, which presently focus on capturing patient encounter data, can be invaluable for evaluating EMS patient care and outcomes. In addition, NEMSIS can potentially provide a business model for the EMS community, with protocols justified by data, budgets defended through data, tools for comparative analyses of agencies and states, and benchmarks for standards of care. These data can help to modify EMS training and curricula, assist in evaluating resources for disaster and domestic preparedness, and inform the development of national fee schedules and reimbursement rates (NEMSIS, 2010).

As noted earlier, NEMSIS data have been employed to characterize pre-hospital airway management by EMS workers, to hopefully guide national quality improvement efforts (Wang et al., 2011). The potential for use of NEMSIS data is huge. The NEMSIS data files also allow for the collection of detailed data about individual agencies and individual EMS workers; such data, if provided by all, could serve as the basis for highly sophisticated workforce planning efforts on local, state, and national levels.

*Patient Protection and Affordable Care Act.* Recent national health reform legislation – the Patient Protection and Affordable Care Act (ACA) will have impacts on all aspects of the nation's health care system. Outcomes research is particularly important and is seen as an important tool in reducing health care expenditures. The ACA has several provisions directly relevant to EMS. A total of \$24 million has been authorized for regionalized EMS demonstration projects in 2010 – 2014. There is also support for EMS research, support for trauma systems, and the inclusion of the EMS workforce as an area of

study for the National Healthcare Workforce Commission. The impacts of the demonstration projects and the National Healthcare Workforce Commission on EMS can only be speculated upon at this time because much of the health reform law is yet to be implemented.

Several researchers believe that ACA will have immediate and direct impacts on the EMS system. Using National Health Interview Survey data to investigate differences in ED and inpatient service utilization rates for young adults 'aging out' of parental insurance coverage, a 40% reduction in ED visits and a 61% reduction in inpatient hospital admissions was associated with loss of insurance coverage (Anderson, Dobkin, & Gross, 2012). With increased insurance coverage, increases in ED visits and hospital admissions might be predicted: The National Center for Policy Analysis (NCPA) anticipates that the increased number of individuals covered by insurance as a result of the ACA will increase the number of ED visits by between 848,000 and 901,000 visits per year (Swanson, 2011). Conversely, Massachusetts' health reform policy, which substantially increased the numbers of individuals with health insurance, was associated with an 8% reduction in ED usage, primarily through a reduction in non-urgent and primary care treatable visits. The impact on injury and other non-preventable visits was negligible (Miller, 2011).

NCPA also argues that, since many of the elderly Medicare recipients and Medicaid enrollees are less likely to have their own transportation, increased ambulance use is likely (Swanson, 2011). If true, this may prove problematic for many EMS agencies, which typically lose money when responding to calls from the publicly insured since the 3% increase in ACA Medicare Part B reimbursements for urban-based transport is insufficient to cover actual transport costs. Quality data on increased service volumes and actual costs, potentially obtainable through NEMSIS, can help strengthen the case for increased Medicare and Medicaid reimbursement rates. ACA tries to be data driven: Good workforce data will be invaluable for setting reimbursement rates.

## CONCLUSIONS AND RECOMMENDATIONS

*Conclusions.* Recent data indicate there are about 826,111 credentialed EMS professionals at the EMT-Basic, EMT-Intermediate, and Paramedic levels in the nation. Since not all credentialed EMS workers are employed as EMS workers and since many EMS workers (particularly volunteers) work part-time, this is most likely an overestimate of the number of full-time EMS workers in the nation. According to Bureau of Labor Statistics projections, the size of this workforce is anticipated to grow substantially (much faster than average for all occupations) over the next decade.

The EMS workforce, unlike any other allied health profession workforce, includes a very large volunteer component. Volunteer EMS workers are much more prevalent in rural areas. Workforce issues and concerns of volunteer providers and paid providers are often very different, particularly with respect to reasons for entering the profession, satisfaction with different aspects of the profession, and reasons for leaving the profession. Therefore, for workforce planning, it is very important to know how many providers, at each service level, are volunteers and how many are fully compensated.

A substantial proportion of EMS workers are cross-trained and deliver fire protection or public safety services. The workforce issues for these cross-trained providers and those affiliated with EMS-only agencies can also be very different.

There has been a good deal of recent research on issues related to EMS worker retention, recruitment, and health and safety. Recruitment and retention issues can vary substantially as a function of practice level, agency type (e.g., volunteer vs. non-volunteer; fire service vs. EMS-only), and locale (rural vs. non-rural), but there are concerns common to all EMS workers. EMS is a dangerous occupation, with high injury rates. The incidence of various health problems, including back problems, hearing problems, obesity, and sleeping problems and fatigue is substantial. These problems, especially sleep and fatigue, are negatively impacting the quality of services being provided by EMS workers. Furthermore, EMS workers are exposed to pathogens, both in the field and at their work place. Fortunately, there appear to be effective policies and practices that can help reduce injuries, accidents, and health promotion behaviors (such as seat belt use).

Information about the numbers of EMS workers being trained, at each level, is another important element for workforce planning. Linking eligibility for paramedic testing at the National Registry of EMTs with a requirement for graduation from an accredited training program will facilitate the collection of information about the number and types of individuals completing paramedic training. At practice levels below paramedic, most training occurs in non-academic settings and in settings for which accreditation is not required. This creates challenges in learning about the numbers and types of individuals enrolled in these programs.

*Recommendations.* Our review of workforce planning activities for other allied health professions provided scant guidance for EMS workforce planning. A recent literature review concluded there was no real evidence that measures such as staffing ratios to assist allied health workforce planning have been successfully employed (Cartmill et al., 2012); a recent National Academy of Sciences Allied Health Workforce and Services Workshop reiterated one of the basic messages of our review:

*Getting better data and looking at the long-term needs is going to be critical for the future* (Salsberg, 2012, p. 27).

One of the barriers to getting good information, noted by many, is a need for standardized definitions. The NEMSIS Data Dictionary has provided a good starting point; NHTSA's EMS Workforce Data Definitions project has extended this work. Together, they provide a common language for future EMS Workforce data collection projects. The challenge is encouraging implementation of these definitions by the organizations and individuals collecting workforce data.

Widespread adoption of the *Education Agenda for the Future: A Systems Approach*, particularly with respect to national EMS education program accreditation and national EMS certification would facilitate the collection of critical workforce supply data, among other benefits. As previously noted, paramedic program accreditation will be a requirement for taking the NREMT certification exam by the end of the year, facilitating collection of data about the supply of this sector of the EMS workforce in the near future.

We would like to reiterate some of the recommendations of the *National EMS Assessment*:

*Adoption of state requirements for local EMS data collection and submission to state EMS data systems so that each state data system can be population based, rather (than) a convenience sample of participating agencies. (p. 19)*

*Development of improved data systems that allow for the differentiation between rural and urban EMS data in order to better describe and understand any geographic differences that may exist. (p. 19)*

Workforce planning needs are a topic of immediate concern; providing the data to enable this planning can best be coordinated by state EMS offices. However, in nearly half (43%) of the states, EMS system planning and local EMS data collection receive no or minimal effort. Task forces, comprised of state EMS Data Managers, can be convened and asked to discuss strategies and approaches that were successful in promoting workforce planning in their states, so that this information might be shared and used to encourage workforce planning in all of the states. Such task forces can also discuss ways they might be able to provide unduplicated counts of all licensed, currently active, EMS workers in the state (by level, paid vs. volunteer status, and type of employer), through the use and modification of existing data collection systems. Similar discussions about ways to provide counts of individuals enrolled in and graduating from EMS training programs below the paramedic level could facilitate identification of cost-effective approaches to the collection and provision of these data.

Standardized approaches for addressing concerns about demand could also be developed and shared. For example, a standardized survey of agencies about EMS hiring and staffing plans, along with procedures and practices to encourage survey response, could be developed and shared, reducing the development costs and burdens on individual states. Similarly, analysis tools and procedures could be developed and shared, reducing costs and burden for the State EMS offices.

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