

October 2001

# EMERGENCY MEDICAL SERVICES

## Reported Needs Are Wide-Ranging, With A Growing Focus on Lack of Data



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## Abbreviations

CDC	Centers for Disease Control and Prevention
EMS	emergency medical services
HCFA	Health Care Financing Administration
HHS	Department of Health and Human Services
HRSA	Health Resources and Services Administration
NHTSA	National Highway Traffic Safety Administration
USFA	U.S. Fire Administration



United States General Accounting Office  
Washington, DC 20548

October 12, 2001

The Honorable Susan M. Collins  
The Honorable Russell D. Feingold  
United States Senate

On a typical day in the United States, thousands of people face medical emergencies that require immediate treatment before reaching a hospital. For these people, emergency medical services (EMS) systems—including a 911 telephone dispatch center, medical treatment by responding emergency personnel, and emergency transportation to a hospital—are the front line of care. In some situations, emergency services can be the difference between life and death. For example, chances of surviving a sudden cardiac arrest decrease an estimated 10 percent for every minute's delay in treatment. People who need such emergency, prehospital care depend on well-trained responders reaching them quickly, identifying the type of treatment they need, and, in the case of life-threatening situations such as cardiac arrest, administering needed life-sustaining treatment wherever the person may be.

EMS systems are primarily local, but states play a major role in regulating them. The federal government has also adopted a role supporting and promoting efforts to improve EMS systems—for example, by making the improvement of EMS a national health priority. In its Healthy People 2010 initiative outlining health care improvement goals for the next decade, the Department of Health and Human Services (HHS) established a goal of increasing the proportion of people who can be reached by EMS within 5 minutes in urban areas and within 10 minutes in rural areas. As an important part of the public health safety net, EMS and the quality of prehospital care have been of interest to the federal government, and four federal agencies provide technical assistance and funding to state EMS systems. For example, the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) develops EMS training curricula and material and provides technical assistance to state EMS agencies by sponsoring workshops on such topics as quality improvement for EMS systems. Evidence suggests that EMS systems vary widely in their ability to respond and in the outcomes of the treatment they provide. For example, studies indicate that EMS response time can vary significantly across areas and the chance of surviving from an out-of-hospital cardiac

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arrest can range, depending on locality, from 2 percent to more than 25 percent.<sup>1</sup> Because of the federal interest in improving EMS and the variability across EMS systems, you asked us to identify (1) the needs reported by local EMS systems and state regulatory agencies for improving EMS outcomes and (2) the efforts of federal agencies in supporting and promoting EMS improvements.

The information we collected and analyzed came from a variety of local, state, and national sources, such as the National Association of State EMS Directors' survey conducted in 2000 that assessed rural EMS needs and federal assessments conducted from 1988 through 1997 covering the capacities and needs of EMS systems in 46 states. We supplemented this information by interviewing officials at national associations with an interest in improving EMS.<sup>2</sup> To obtain more detailed examples of system needs, we interviewed officials from nine local EMS systems and six states, chosen because they reflected widely varying locations and system characteristics. Our work at the federal level focused on four agencies that are involved with EMS: (1) NHTSA, (2) HHS' Health Resources and Services Administration (HRSA), (3) HHS' Centers for Disease Control and Prevention (CDC), and (4) the Federal Emergency Management Agency's U.S. Fire Administration (USFA). We also consulted the Health Care Financing Administration (HCFA)<sup>3</sup> because of its role in providing health insurance coverage for ambulance transports under Medicare, the federal insurance program for the elderly which pays more than \$2 billion a year for ambulance services. We did not include agency activities that support emergency disaster response in the scope of our review.<sup>4</sup> We performed

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<sup>1</sup>For example see M.S. Eisenberg, B.T. Horwood, R.O. Cummins, R. Reynolds-Haertle, and T. Hearne, "Cardiac Arrest and Resuscitation: A Tale of 29 Cities," *Annals of Emergency Medicine*, Vol. 19 (1990), pp. 179-186.

<sup>2</sup>See appendix I for the specific organizations, localities, and states we consulted.

<sup>3</sup>In June 2001, HCFA was renamed as the Centers for Medicare and Medicaid Services. Because our fieldwork was conducted while the agency was known as HCFA, we are referring to the agency in our report findings by its former name.

<sup>4</sup>Other federal agencies support EMS with assistance for responding to disasters. For example, HHS' Office of Emergency Preparedness provides contracts to increase local emergency response capabilities to respond to mass casualty events and the Department of Justice's Office of Justice Programs administers training and equipment assistance programs for state and local emergency response agencies to better prepare for terrorist incidents. For more information on this subject see: *Bioterrorism: Federal Research and Preparedness Activities* (GAO-01-915, Sept. 28, 2001).

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our work in accordance with generally accepted government auditing standards from November 2000 through August 2001.

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## Results in Brief

In surveys and assessments conducted in recent years, local emergency medical systems have reported substantial needs for improving the emergency care they provide. These reported needs, which come under such categories as personnel, training, equipment, and the availability of doctors to advise emergency personnel in the field, tend to vary between urban and rural locations. For example, rural systems were more likely to report training needs in retaining basic clinical skills, while urban systems were more likely to report training needs related to better serving diverse groups of people within a community. The extent and impact of the reported needs is difficult to ascertain, however, because there is little standard and quantifiable information that can be used across systems. Most of the available information about the effect of unmet needs is localized and anecdotal. At the state level, agencies responsible for regulating and improving EMS efforts report a need for better management tools and information systems for assessing local systems' performance and determining how best to improve the outcomes of EMS care.

Federal agencies that support and promote EMS improvements do so mainly by acting as facilitators rather than by establishing requirements or providing significant funding. The agencies provide technical assistance, set voluntary standards for licensing EMS providers, and administer limited grant funding (about \$30 million in fiscal year 2000). In 1995, two of these federal agencies, NHTSA and HRSA, brought together representatives of federal agencies and 19 national organizations to develop a strategic plan, called the *EMS Agenda for the Future*. In 1999, when EMS officials and organizations revisited the Agenda in order to establish priorities for EMS, the need for better information about EMS activities and outcomes was highlighted as a longstanding issue of growing focus. As part of their attempts to act as facilitators, each of the four federal agencies have separately initiated attempts to collect EMS data or promote consistency in the data. However, progress in developing such information has been slow. In 2000, for example, fewer than one-fifth of states responding to a national survey indicated that they had the ability to collect information statewide in a format developed by the EMS community. State and local EMS officials said that a key reason for the lack of progress is that, faced with many competing demands on their time, EMS providers and local systems have few incentives to collect and report EMS information.

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In written comments on a draft of this report, HHS stated that the report accurately reflected its programs and activities. In oral comments, the liaison with the Federal Emergency Management Agency stated that the report also accurately reflected its programs and activities. The Department of Transportation said it had no comments.

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## Background

EMS systems are designed to provide a quick, coordinated response of emergency medical care resources for traumatic incidents and medical emergencies. Persons who need such a response may need help for a variety of medical conditions, such as cardiac arrest, diabetes, seizures, or behavioral disorders, or they may have injuries such as burns, wounds, or severe head or spinal damage. The major components of an emergency medical system often include the following:

- **A public access system.** This is generally a 911 emergency telephone line used to contact and dispatch emergency medical personnel.
- **Emergency medical response.** The goal for the initial response is to have medically trained personnel available to the patient as quickly as possible and to provide early stabilizing care. The level of care provided can be either basic life support or advanced life support.<sup>5</sup> Because most EMS agencies operate independently of other medical facilities and have relatively few physicians among their providers, the ability of field personnel to talk with a physician is important in ensuring appropriate medical care. Such a link to “medical oversight” ensures that field personnel at the scene or during transport have immediately available expert direction that can authorize and guide the care of their patients.
- **Emergency medical transport or transfer.** This involves getting the patient to a hospital or other medical facility. Although an important component of the system, emergency transport does not apply in all cases. Officials responding to a recent survey of urban EMS systems indicated, for example, that an average of 37 percent of emergency requests do not result in emergency transport.

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<sup>5</sup>Basic life support responders provide basic first aid, such as stopping bleeding, immobilizing fractures, and administering cardiopulmonary resuscitation. Advanced life support responders provide basic first aid, but also are trained to treat severe trauma and can administer drugs, establish intravenous lines, open airways through endotracheal intubation, and apply other lifesaving or life-sustaining techniques.

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EMS systems are typically managed and operated by local communities and jurisdictions, such as counties or fire districts. Entities involved in providing EMS for a particular community may include fire departments with paid or volunteer personnel trained in both fire suppression and EMS or EMS alone, for-profit or not-for-profit ambulance companies, volunteer ambulance services or rescue squads, hospitals, and government-based EMS organizations. The extent of involvement of each type of entity in local EMS systems nationwide is not fully known. While some systems provide both emergency response and emergency transportation within the same agency or organization, others may use multiple organizations. For example, a fire department may provide the first emergency response while a private ambulance company provides most emergency transport. Varied sources of EMS funding also exist, such as local taxes, billing for services provided, private-sector donations, subscription services, and government grants.

At the state level, EMS agencies generally do not provide direct services but rather regulate and oversee local and regional EMS systems and EMS personnel. In most states, state laws and regulations govern the scope, authority, and operations of local EMS systems. While the state's authority and role varies from state to state, the agencies typically license and certify EMS personnel and ambulance providers and establish testing and training requirements. Some establish standard protocols for treatment, triage, and transfer of patients. State EMS agencies may also be responsible for approving statewide EMS plans, allocating federal EMS resources, and monitoring performance.

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## State and Local EMS Officials Report Wide-Ranging Needs

At the local level, the needs reported by EMS systems are wide-ranging and diverse, reflecting the different environments in which they operate. However, the available data allow a better understanding about the kinds of problems reported than about their effects. At the state level, the reported needs centered on the lack of information and systems for evaluating the performance of EMS systems and deciding how best to make improvements.

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## Reported Needs of Local EMS Systems Reflect Diversity of Environments

At the local level, the challenges faced by individual systems are often associated with variations in such factors as the characteristics of the population served and the geography of the area. The area served by an EMS system can range from isolated rural settings in mountainous terrain to sprawling and densely populated urban settings with high-rise buildings and traffic gridlock. Such differences tend to be reflected in certain

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aspects of the EMS system itself. For example, according to officials, rural areas are less likely than urban areas to have 911 emergency dialing (requiring callers to use a 7- or 10-digit number instead), and their communication between dispatchers or medical facilities and emergency vehicles are more likely to suffer from “dead spots”—areas where messages cannot be heard. Rural areas are also more likely to rely on volunteers rather than paid staff, and these volunteers may have fewer opportunities to maintain skills or upgrade their skills with training.

These differing characteristics affect what officials perceive and report as key needs. For example, officials from national associations representing EMS physicians have indicated that long distances and potentially harsh weather conditions in rural areas can accelerate vehicle wear and put vehicles out of service more often. By contrast, an urban area may be less concerned with vehicle wear and more concerned with traffic problems. A 1994 study,<sup>6</sup> for example, compared New York City’s EMS response time for cardiac arrest patients with response times reported from other locations. In New York City, the time interval from patient collapse to arrival of EMS personnel at the patient’s side was about 11.4 minutes, nearly half of which (5.5 minutes) was spent negotiating city traffic. This interval was similar to ambulance driving time reported in another large city, Chicago, but was significantly longer than the 3.3 minutes of driving time required in a suburban county in the state of Washington.

The variety of EMS needs can be seen in the various categories of needs reported by EMS officials. Far-reaching needs were identified in a March 2000 national survey on rural EMS needs,<sup>7</sup> from our own fieldwork involving urban and rural EMS systems, from our review of the professional literature, and in our conversations with EMS experts.

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<sup>6</sup>G. Lombardi, E.J. Gallagher, and P. Gennis, “Outcome of Out-of-Hospital Cardiac Arrest in New York City- The Pre-Hospital Arrest Survival Evaluation (PHASE) Study,” *Journal of the American Medical Association*, Vol. 271 (1994), pp. 678-683.

<sup>7</sup>*Challenges of Rural Emergency Medical Services – Opinion Survey of State EMS Directors, 2000*, [http://www.nasemsd.org/rural\\_emergency\\_medical\\_servic.html](http://www.nasemsd.org/rural_emergency_medical_servic.html) (cited Apr. 20, 2001). In March 2000, HRSA and the National Association of State EMS Directors conducted a national survey asking state EMS directors about their needs for ensuring adequate EMS services in rural areas. Directors in 41 states responded. A similar survey on the needs of urban EMS systems does not exist. The needs reported for urban systems are thus based only on our interviews with urban officials.



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- **Recruitment and retention of EMS personnel.** In rural systems, personnel needs reflected these systems' heavy dependence on volunteers. Rural systems reported that it was getting more difficult to recruit volunteers, especially for daytime shifts, and that inadequate staffing was a major problem affecting the ability to quickly respond to emergencies. For example, one predominantly volunteer EMS squad reported having difficulty responding to early-morning calls because most of its volunteers also had full-time jobs. Officials reported that in the past year, the service had been unable to immediately respond to two early-morning calls involving critically ill patients. Rural EMS systems also report encountering problems with staff attrition due to increased demand on personal time for training and calls, stress from treating relatives and neighbors, and poor working conditions. For example, in one instance, closure of a local hospital increased demands on staff by doubling the amount of time personnel had to spend transporting patients. In another example, a state reported concerns about the ability to retain volunteer staff because they had to use antiquated and unreliable equipment, such as ambulances that frequently stranded them in remote areas or that had unreliable lighting, requiring them to provide care by flashlight. In urban systems, where there is less reliance on volunteers, experts report that job stresses may involve very different concerns, such as a higher possibility of encounters with violent situations.
  - **Training and Education.** Rural systems reported training and education needs that focus on retention of infrequently used medical skills, as well as training in management, budgeting, personnel, and organizational issues. EMS officials said that in rural areas, the sparsity of staff and distances were major impediments to providing in-person training. One local system reported that some personnel certified to provide advanced care had never performed certain advanced procedures, such as airway intubation.<sup>8</sup> This system is currently trying to partner with a local hospital to provide the necessary clinical experience. By contrast, some urban systems we consulted reported needing specially trained staff to respond to patients with mental disorders and personnel trained in different languages so they could better communicate with the diverse populations they serve.
  - **Equipment.** In the March 2000 survey, a wide range of equipment needs was reported for rural systems, including communication equipment (73 percent of respondents), medical equipment (68 percent of respondents), ambulances (54 percent of respondents), and buildings (34 percent of respondents). For example, one survey respondent cited a rural county

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<sup>8</sup>Intubation refers to the insertion of a tube into the trachea (windpipe).

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that had one operational ambulance for 6,500 residents (the state average was 1 per 4,600 residents) and only three hand-held portable radios were available for the six medical personnel on call. Asked to estimate the costs of addressing the capital needs for rural EMS systems in their states, only 28 of the 41 state EMS directors responding to the survey said they had enough information to provide an estimate. The average state cost, based on the figures from 27 of these states, was \$12.2 million.<sup>9</sup> For urban systems, no similar survey or set of estimates is available. Officials we spoke with indicated that urban systems also face equipment needs.

- **Financing.** Both urban and rural systems reported examples of tenuous financing. In rural areas, officials reported that it is difficult to fully support the high fixed cost of operating around-the-clock EMS services because the number of calls is generally smaller in sparsely populated areas, limiting the opportunities to bill for services. This difficulty has resulted in some communities going without local EMS coverage. For example, one county reported going without the services of a dedicated EMS provider for the past several years and instead relied on ambulance response from other communities that may be located as far as 20 miles away. According to officials, this county—with a population less than 3,000, no industry, and a relatively small number of businesses—has an insufficient tax base to support such services. Other states have reported increased response times in their rural areas due to lack of funds to maintain greater capacity. Urban systems reported financing problems caused by a growing demand for services combined with tight community budgets. Officials of systems that relied heavily on local government funds and levies to support their operations said they were considering billing health insurers to supplement the income of their EMS services. At the same time, some systems that were relying on income from billing health insurers reported concerns about declining reimbursement levels from these sources due to possible changes in reimbursement rules.
- **Medical oversight.** Both rural and urban EMS officials we spoke with expressed a need for improved medical oversight, but this need took different forms. Officials from two urban systems pointed to the need to centralize and standardize medical direction. One official said his system was trying to provide consistent medical direction to EMS providers in the field by centralizing the medical direction in one location, rather than

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<sup>9</sup>The states contributing to this estimate were located in different regions of the country, and the percentage of the state considered rural (based on self-defined criteria reported by the directors) ranged from 20 percent to 95 percent. One of the 28 state estimates was \$3.5 billion, 77 times larger than the second highest estimate. The outlying figure was removed prior to estimating the average cost of capital improvements.

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having it provided by six different hospitals.<sup>10</sup> Systems in other locations may face different challenges. For example, a rural state reported that in most communities, physicians providing medical direction were as far as 100 miles away. In addition, they were not always available.

While surveys and assessments give some indication of EMS needs, the full picture remains incomplete. For instance, a survey on urban EMS needs has not been conducted. In addition, the extent and impact of these reported needs and problems in particular locations, relative to other local and state systems, is unknown because systems are localized and thus there is little standard and quantifiable information that can be used to compare systems. The Institute of Medicine has noted that without reliable information, it is hard for emergency care providers, administrators, and policymakers to determine in a systematic way (1) the extent to which systems are providing appropriate, timely care or (2) what they ought to do to improve performance and patient outcomes.<sup>11</sup>

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### At the State Level, Reported Needs Center on Basic Management Components

At the state level, reported needs tend to revolve around basic components for coordinating EMS programs, such as information about the activities of local EMS systems and methods to evaluate the care being provided. These reported needs come mainly from state-level assessments conducted by NHTSA. This agency has a program that allows states to request federal assistance in assessing the effectiveness of their EMS systems. In this process, NHTSA assembles a team that evaluates states—based on in-depth briefings from, for example, state EMS officials, public and private sector partners, and members of the medical community—on 10 standard components such as medical direction, human resources, training, and evaluation systems.

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<sup>10</sup>In this case, officials told us that a change in state law was required to allow EMS agencies and providers to receive medical direction away from their “base” hospital. There were six base hospitals in this location, each hospital with different philosophies and protocols for treating emergency patients, resulting in inconsistent medical direction for emergency responders. Officials were working towards having one center that would provide medical direction for all EMS runs in the locality.

<sup>11</sup>Institute of Medicine, *Emergency Medical Services for Children* (Washington, D.C.: National Academy Press, 1993). The Institute is a federally chartered, private, nonprofit, self-governing organization that is responsible for advising the federal government, upon request and without fee, on questions of science and technology.

A 1999 compilation summarizing the findings of a decade of NHTSA assessments in 46 states showed that most states were missing important management components.<sup>12</sup> For example, at the time of assessment none of the 46 states had established EMS performance standards (such as the percentage of response times that should fall within an established time frame), 91 percent did not have a functional system for collecting and analyzing data from EMS providers, and 89 percent did not have a statewide system to evaluate patient care. Table 1 documents 10 areas identified by the assessments that were in need of greatest improvement. All of these areas were cited then as a need in at least 80 percent of the 46 states evaluated.

**Table 1: Major Areas for State EMS Improvement Cited in a 1999 Compilation of EMS Assessments in 46 States (Conducted 1988 –1997).**

<b>Area of improvement</b>
Pre-established EMS system performance standards
Functional system for collecting and analyzing data from prehospital providers
Statewide quality assurance program to evaluate patient care
Comprehensive system of medical oversight for all prehospital providers
Current knowledge of the functional capability of the facilities that receive patients from the prehospital providers
Standardized training or monitoring for on-line medical direction
Communications equipment and established system for monitoring reliability of equipment
Current state EMS plan
Minimum standards for dispatch centers
Consistent quality assurance program for training courses and instructors

Source: NHTSA

These assessments are subject to some limitations in that time has elapsed since they were conducted, they reflect the views of many different assessment teams, and there are no data showing the negative effects that resulted from the reported deficiencies. There are indications that some improvement has occurred—but also that many problems continue. For example, a preliminary update conducted by NHTSA in 2001 found that because enough states had implemented a statewide quality assurance program and a state EMS plan, the percentage of states still in need of

<sup>12</sup>U.S. Department of Transportation, NHTSA, “EMS System Development: Results of the Statewide EMS Assessment Program December 1988 to October 1997, Interim Report,” Washington, D.C. (1999) (unpublished).

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improvement in these areas was less than 50 percent. However, a NHTSA official provided information that showed that most states still have significant needs in most of these areas. For areas of improvement other than the quality assurance programs and state EMS plans, the preliminary assessment found that 50 percent or more of states remained in need of improvement.

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## Federal Agencies Support EMS Improvements Mainly By Acting As Facilitators

While no single federal agency has lead responsibility for EMS activities, four federal agencies help support and promote EMS improvements, acting primarily as facilitators through activities such as technical assistance. In 1995, two of these agencies facilitated an effort to gain EMS stakeholder consensus on a comprehensive national strategy to improve EMS, called the “*EMS Agenda for the Future*.” While progress in implementing the Agenda has been made, federal EMS officials told us that a 1999 effort to revisit the Agenda goals and set major priorities for achieving them highlighted a need for improved EMS information and information systems. While this need had been a longstanding issue for years within the EMS community, officials told us that the process of setting priorities resulted in a growing focus on this gap. This information gap was further highlighted when HCFA changed the manner in which it reimbursed EMS providers for ambulance services. Federal officials said progress in implementing the Agenda has been affected by the lack of consistent information about EMS systems, and as part of their attempts to act as facilitators, they have all attempted to collect EMS data or promote consistency in the data. Several local agencies we contacted also reported needing improved EMS data and information to monitor and improve performance, but they recognized that data collection and reporting is sometimes a low priority and an administrative burden in the face of competing demands on EMS providers’ time. Federal agencies, in different ways, are working to collect and promote improvement of EMS data with available resources.

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## Federal EMS Activity Centers on Four Agencies

Four different federal agencies are involved in supporting and promoting EMS improvements. None imposes standards or enforces requirements on how EMS systems should operate. Instead, the agencies undertake activities such as providing technical support and guidance, providing funding for EMS initiatives through various grant programs to states, and exploring avenues for developing a consensus among EMS providers on policy needs and changes. The agencies and their major activities are as follows:

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- **National Highway and Traffic Safety Administration.** NHTSA's EMS division, with a budget of \$1.4 million in fiscal year 2000, has several activities that support the development and improvement of EMS care. A core goal is to enhance the quality of EMS services, in part by developing national curricula for training and certifying EMS responders. Other activities include providing technical guidance to state EMS agencies through such venues as seminars on designing and implementing information systems and state assessments to identify system development needs and strategies; conducting training for medical directors and administrators of EMS systems; publishing educational and instructional materials on how to improve EMS; and funding research and demonstration projects to promote EMS improvement. According to NHTSA officials, the EMS division became involved in standardizing emergency medical services in the 1960s after recognition at the federal level of a need to improve and monitor the quality of EMS. NHTSA also provides grants to states and territories for highway traffic safety. In fiscal year 2000, about \$4.9 million of this money was used for EMS improvements.<sup>13</sup>
  - **Health Resources and Services Administration.** Two components of HRSA are involved in EMS: the Maternal and Child Health Bureau's EMS for Children program and the Office of Rural Health Policy. The EMS for Children program provides strategic planning to enhance the pediatric capabilities of EMS systems, provides financial support to NHTSA for EMS projects and conferences, and funds resource centers that provide technical assistance to state EMS agencies. In fiscal year 2000, the EMS for Children program provided approximately \$9.8 million to states in the form of grants. The Office of Rural Health Policy sponsored grants to states to strengthen rural health and grants to rural health providers to expand access, coordinate services, control the costs of care, and improve the quality of essential health care services. Each of these grant types can be used to support emergency services. HRSA officials estimate that states and providers received \$4.2 million in fiscal year 2000 to promote the development of EMS systems in rural areas.<sup>14</sup> For example, one project established a partnership between a trauma foundation, a university

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<sup>13</sup>These funds were provided through Department of Transportation, NHTSA, Highway Traffic Safety Grants, Section 402 Grants. These state formula grants are provided to encourage more effective programs to improve highway safety. The states may choose to use the grants to improve EMS and trauma care systems.

<sup>14</sup>About \$3.2 million of this funding was provided through the Rural Hospital Flexibility Grant program. The remaining \$1 million was provided through the Rural Health Outreach Grant and the Rural Network Development programs.

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telecommunication center, and the state department of health to provide distance learning opportunities for rural EMS providers, helping them obtain new knowledge, skills, and clinical competency. HRSA is also a leading and coordinating agency for national objectives related to access to quality health services, including emergency services, developed in the Healthy People 2010 initiative for improving the nation's health. One such objective is to increase the proportion of people who can be reached by EMS rapidly, in particular the proportion who can be reached by EMS within 5 minutes in urban areas and within 10 minutes in rural areas.

- **Centers for Disease Control and Prevention.** CDC administers the Preventive Health and Health Services Block Grant program that provides funds to states for preventive health programs and projects, including projects to plan, establish, expand, or improve EMS systems. In fiscal year 2000, 20 states elected to use \$11.1 million from their allocated grants to fund EMS activities. CDC is also a leading agency for HHS' Healthy People 2010 objectives related to heart disease and EMS, such as increasing the proportion of adults who are aware of the early warning signs of a heart attack and the importance of accessing emergency care by calling 911.
- **U.S. Fire Administration.** USFA supports EMS systems operated by fire departments. Approximately 80 percent of fire departments in the United States provide some EMS services. USFA publishes guidance for EMS administrators and provides training for managers and personnel through the agency's National Fire Academy. This agency also maintains a voluntary database that captures fire and some EMS information, such as amount of time spent at the emergency scene, and information about the types of medical conditions seen and the procedures performed. Beginning in fiscal year 2001, USFA administers a grant program for fire departments, which could include some funding for EMS.<sup>15</sup>

Federal funding through these four agencies for local and state EMS needs totaled about \$30 million in fiscal year 2000. However, half of these funds are subject to federal restrictions that limit the amount that can be spent on equipment or other capital needs. Many states use federal grant moneys

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<sup>15</sup>Congress established and funded for fiscal year 2001 a new grant program administered by USFA to address the needs of fire departments in 14 categories, including the category of EMS provided by fire departments. For that year, \$100 million was appropriated. At the time of our review, it was unclear the extent that this grant funding would be used to support EMS. USFA identified six categories that would be funded: training, fitness programs, vehicles, fire fighting equipment, personal protective equipment, and fire prevention programs. USFA officials stated that even though the specific EMS category was not selected, grant funding, for example, for personal protective equipment needs, could potentially support EMS needs.

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to fund their basic regulatory functions. For example, several states used Preventive Health and Health Services block grants from CDC to pay for improvements to basic state administrative processes, such as licensing, certifying, and inspecting ambulance operators and EMS personnel.

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### Agencies Helped Gain Consensus on EMS Improvement Strategies

As part of their work as facilitators, federal agencies have assumed a significant role in identifying and highlighting strategies for improving EMS systems. A major effort in this regard occurred in 1995, when NHTSA and HRSA facilitated a multi-disciplinary group to create an overall strategic plan for improving EMS systems. This group comprised more than 100 EMS stakeholders, including representatives of federal agencies, 19 national organizations, and state and local EMS providers. The resulting strategic plan, known as the *EMS Agenda for the Future*, identified 14 areas requiring continued development for EMS systems to be maximally effective. These areas encompass such matters as the need for continuous and comprehensive EMS program evaluation, communication systems that result in the most effective course of action, qualified medical direction for all EMS providers and activities, a prepared work force, and a finance system that supports EMS systems so they are prepared to meet the demands placed on them.

In 1999, NHTSA and HRSA issued a second key document after reconvening EMS local, state, and national agencies and stakeholders to develop a list of priorities for implementing the Agenda, which was published in 1996. This document, the *EMS Agenda for the Future: Implementation Guide*, identified over 90 objectives for implementing the Agenda's goals.<sup>16</sup> Ten of these objectives, shown in table 2, were highlighted as priorities because, among other things, they addressed major pressing problems and had the potential to improve EMS systems and patient outcomes. Officials at NHTSA and HRSA told us that some progress in these areas has been achieved. For example, federal agencies had convened a workgroup to develop an EMS research agenda and worked with the American College of Emergency Physicians and the National Association of EMS Physicians on a 2-year process to develop a new set of guidelines on medical direction.

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<sup>16</sup>U.S. Department of Transportation, NHTSA, *EMS Agenda for the Future: Implementation Guide* (Washington, D.C.: U.S. Government Printing Office, 1999).



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**Table 2: Priority Objectives Identified in the 1999 EMS Agenda for the Future: Implementation Guide**

**Description of priority**

Integration: Develop relationships between EMS agencies and other public/community health and safety organizations to identify community health and safety issues.

Legislation: Each state should have EMS enabling legislation authorizing a lead EMS agency with authority to support innovation and geographic integration among local EMS systems consistent with the EMS “Agenda for the Future.”

Medical direction: Allocate adequate resources for medical direction.

Finance: Develop reimbursement systems between EMS agencies and health care payers to provide financial incentives to improve the efficiency and effectiveness of EMS.

Prevention: Participate in community-based efforts to reduce preventable injuries and illness.

Communication: Ensure nationwide availability of 911 as the emergency telephone number.

Communication: Ensure that all calls for emergency help are automatically accompanied by location-identifying information.

Information systems: Develop information systems to generate valid, reliable, and accurate data—taking into consideration hardware and software compatibility, confidentiality issues, and training—that can be linked to those of other health care providers, public safety agencies, and community resources, to be used for tracking and reporting system utilization and patient care and outcomes.

Evaluation: Determine the cost and benefits of EMS to the community.

Research: Establish a national EMS research agenda and distribute findings of research in guidelines for uniform reporting styles and standard outcome measures.

Source: NHTSA

These agencies also had other activities designed to identify and address EMS needs for specific concerns. For example, HRSA and NHTSA have also joined with EMS experts to develop a 5-year strategic plan to address the many gaps in emergency services available to children, most recently to cover 2001 through 2005. This national blueprint serves as a road map for many states and organizations and addresses issues parallel to those identified in the Agenda such as need for including a pediatric component in the development of EMS information systems.<sup>17</sup>

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<sup>17</sup>U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau (2000). *Five-year Plan: Emergency Medical Services for Children, 2001-2005*. Washington, D.C: Emergency Medical Services for Children National Resource Center.

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## Need for Consistent Information is a Longstanding Issue of Growing Focus

Another area in which federal agencies have acted as facilitators has been in developing a framework for promoting EMS information systems. In 1993, HHS, NHTSA, and USFA sponsored a comprehensive project to address the need for more consistently collected EMS data.<sup>18</sup> This effort produced a model set of EMS data elements and definitions that states and local systems could use as the basis for creating their own information systems. Data elements—including the location of the medical emergency, the patient's vital signs, treatments provided, and information on EMS response times—were selected based on their usefulness for several purposes, including documenting the medical care provided; billing for services; evaluating, monitoring, and improving the delivery of EMS care; operating EMS systems; and allocating resources locally.

Gaining consensus on what these data elements should be has not translated into substantial progress in putting them in place. Federal officials told us that gaps in EMS data has been a longstanding concern and problem area that emerged as major priority when objectives for implementing the Agenda for the Future were discussed in 1999. In part, gaps in data grew as a focus of concern because it is an underpinning to other Agenda for the Future goals, such as determining the costs and benefits of EMS to the community and improving research on EMS. The need for more and better data on EMS services was also highlighted, they said, in HCFA's development of a new Medicare fee schedule for ambulance services in 1999 and 2000. During this process, HCFA had difficulties determining how to target payments so that EMS providers serving isolated areas could be appropriately reimbursed. In part because of the limited data available on rural ambulance services, such as the number of ambulance trips made, the agency had difficulty developing a payment adjuster for ambulance providers that serve isolated areas. Such an adjuster was needed to reflect potential differences in the volume of services and unit service costs. Our work looking at this process also found problems with the adequacy of data reported on ambulance claims. Claims for reimbursement were being denied at varying rates across payers because providers were not completing forms correctly and

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<sup>18</sup>Within HHS, seven agencies participated: Division of Trauma and Emergency Medical Systems/HRSA, National Center for Injury Prevention and Control/CDC, National Heart, Lung, and Blood Institute/National Institutes of Health, Maternal and Child Health Bureau/HRSA, Office of Rural Health Policy/HRSA, Office of Coverage and Eligibility Policy/HCFA and the Office of Science and Data Development/Agency for Health Care Policy and Research.

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because of gaps in information on the beneficiaries' health conditions linked to the appropriate level of EMS service.<sup>19</sup>

Along with their federal counterparts, state, and local EMS officials we contacted reiterated an interest and need for improved EMS data collection. They said better, more consistent information was needed for such purposes as the following:

- **Improving EMS performance at the local level.** Local EMS agencies and providers often lack data to justify budget requests, answer questions about patient outcomes, or support ongoing quality improvement and surveillance. All nine local and six state systems we consulted indicated that information and information systems were needed to monitor performance and to justify and quantify needs at the local level for the public and for decisionmakers. At the state level—where resource allocation decisions are often made—officials reiterated the need for basic EMS data collected statewide to help them determine how to set priorities for allocating scarce resources. For example, one state is trying to identify different funding scenarios and sources to reinvigorate its EMS agencies. In doing so, the state is using data to quantify equipment needs to more accurately estimate potential costs.
- **Setting and monitoring national policy.** In addition to data needs for determining a Medicare ambulance fee schedule, the absence of national EMS data is considered a major impediment to monitoring national health priorities. Two goals under the national Healthy People 2010 initiative involve improving response times and access to EMS services. However, HHS officials told us that sources have not been identified or developed to provide data for measuring the status and progress towards achieving these goals. Lack of uniform definitions for data elements across data sources compounds the difficulty of monitoring these goals. For example, while many systems collect data on their response times, they often collect data differently or use different definitions, making comparisons between systems impossible. A survey of EMS systems conducted in 2000 involving the largest 200 cities across the country found that 45 percent of the cities started the response-time clock when the EMS vehicle was dispatched to the scene, while about one-third started the clock when the 911 call for

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<sup>19</sup>*Rural Ambulances: Medicare Fee Schedule Payments Could Be Better Targeted* (GAO/HEHS-00-115, July 17, 2000).

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help was received. In addition, researchers found that the systems defined “dispatch” differently.<sup>20</sup>

- **Improving researchers’ ability to assess EMS outcomes.** Officials from state and local EMS systems told us that the best-documented example of EMS treatments affecting outcomes is for cardiac arrests, in which the expediency of treatment is critical to the survival of the victim. Research has documented the wide variation of cardiac arrest survival rates across locations, but determining the reasons for these variations is hampered because of inconsistent collection methods for EMS data on response times, treatments, and other variables. For example, 1990 research on the survival rates (discharged alive from the hospital) for out-of-hospital cardiac arrest showed rates ranging from 2 percent to 25 percent in 29 separate EMS service areas. The researchers, however, were unable to determine whether these differences were actual differences in outcomes or the result of inconsistencies in data collection.<sup>21</sup>

In addition to the 1993 effort to gain consensus on EMS data elements, federal agencies, in their role as facilitators, have in different ways acted to promote the collection of uniform EMS data. For example, since 1995 HRSA’s EMS for Children program has promoted EMS data collection by funding a data analysis resource center. Staffed with three full-time employees, the center provides technical assistance to states on EMS data collection and systems development. Also, USFA expanded its voluntary National Fire Incident Reporting database in 1999 to include the full range of fire department activities, including EMS.

Despite these efforts, a survey performed in 2000 indicates that few states are currently able to collect statewide data uniformly and consistently. Recognizing the increasing need for such data, the National Association of State EMS Directors, with support from HRSA, conducted this survey to

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<sup>20</sup>G. Cady and D. Lindberg, “2000 200-City Survey – Operational and Clinical EMS Trends in Large, Urban Areas,” *Journal of Emergency Medical Services*, Vol. 26 (2001), pp. 24-42.

<sup>21</sup>This study compared the survival percentage of cardiac arrest patients between types of EMS systems, as defined by the training level of emergency responders and sequence of emergency response, in 29 different locations. In addition to inconsistencies in methodologies and terminology, the authors note that other explanations for the variation in survival percentage include the type of EMS system, response time, type and sequence of the treatment; quality of the system; age of the patient population; and characteristics of the community, such as how often bystander cardiopulmonary resuscitation is administered. See M.S. Eisenberg, B.T. Horwood, R.O. Cummins, R. Reynolds-Haertle, and T. Hearne, “Cardiac Arrest and Resuscitation: A Tale of 29 Cities,” *Annals of Emergency Medicine*, Vol. 19 (1990).

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assess the collection of information at the state and local levels. State EMS directors were asked whether they collected EMS data statewide and whether their systems collected data in line with the model data set definitions. Eighteen of the 46 states responding did not collect any data statewide. Of the 28 states that collected some EMS data at the state level, 18 said their data were compliant with this uniform data set, but 9 of those 18 states reported that they had not received information from all EMS systems in the state.

According to state EMS officials, data improvement efforts are limited because in the face of constrained resources and competing demands for staff time, local systems have little incentive to collect and report electronic data or to adopt a uniform data format that may differ from their own. EMS officials told us that it is very challenging for state agencies to convince local EMS providers, particularly volunteer agencies, to contribute to the state EMS data pool. Officials said that an important component for improving data collection is for local providers to see value in the data they are collecting for improving their services. Officials told us that creating information systems that allow providers to access the data would help providers to see this value, and will be important to enhancing the ability to collect data and to aggregate it at a national level.

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## Concluding Observations

Surveys and assessments of EMS systems have identified broad categories of limitations and needs, showing that basic issues in such areas as staffing, training and equipment, and financing are considered to be day-to-day challenges of local EMS systems and state efforts to coordinate these systems. Determining the magnitude of these problems and how to resolve them, however, is itself a challenge because of the lack of information on which to base an understanding of how these systems perform. Federal agencies have played a significant role in gaining consensus on the long-term national strategic goals and priorities for EMS. With available resources, they are attempting to develop strategies for addressing information needs. Progress in this area, however, is likely to remain slow because EMS systems and providers have many competing demands and few incentives to devote limited resources to data collection efforts.

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## Agency Comments

We provided a copy of the draft report to HHS, the Federal Emergency Management Agency, and the Department of Transportation for review and comment. In its written comments, HHS stated that the report accurately reflected its programs and activities. (See appendix II).

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Similarly, in oral comments, the agency liaison at the Federal Emergency Management Agency told us that the report accurately reflected the agency's programs and activities. The Department of Transportation said it had no comments.

In its comments, HHS also stressed that, given the terrorist attacks of September 11, the key themes and findings of the report were even more relevant. We agree that EMS systems are a critical part of the public health safety net, both in responding to day-to-day emergencies of citizens and in responding to disasters. We have modified our report to clarify that our scope was to capture information on the stated needs of EMS systems apart from issues related to disaster preparedness. HHS also expressed that its Emergency Medical Services for Children, 5-year strategic plans should be mentioned in the report. We believe the EMS consensus plan supported by HHS, NHTSA and others—the EMS Agenda for the Future—better represents the EMS needs for the general population, but we have added information about HHS' latest strategic plan for children. HHS also provided technical or clarifying comments related to its grant programs and other areas, which we incorporated as appropriate.

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As we agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this letter. We will then send copies to the Secretary of Health and Human Services, the Director of the Federal Emergency Management Agency, the Secretary of Transportation, appropriate congressional committees, and other interested parties.

If you or your staff have any questions about this report, please contact me at (202) 512-7119 or Katherine Iritani at (206) 287-4820. Other major contributors to this report were Tim Bushfield, Leslie Spangler, and Stan Stenersen.



Janet Heinrich  
Director, Health Care—Public Health Issues

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# Appendix I: Organizations and EMS Systems Consulted

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In conducting our work, we consulted officials from national and state organizations and other experts to obtain their views on EMS systems and care. We also consulted officials from six state EMS agencies and nine local EMS systems to obtain more detailed information. We selected these agencies to obtain information from EMS systems with differing system characteristics such as population (rural/urban), level of EMS service (state/county/local), type of staffing (paid/volunteer), and service organization (fire department/private ambulance services/contracted).

## Organizations

American Ambulance Association  
American Heart Association  
Center for Health Affairs  
International Association of Fire Fighters  
Medical College of Virginia  
Medical College of Wisconsin  
National Association of State EMS Directors  
National EMSC Data Analysis Resource Center  
National Volunteer Fire Council  
University of Michigan  
University of Washington

## State EMS Systems

Alaska  
California  
Maryland  
North Carolina  
Pennsylvania  
Washington

## Local EMS Systems

Columbus, Ohio  
Gray, Maine  
King County, Washington  
Multnomah County, Oregon  
Phoenix, Arizona  
Pinellas County, Florida  
San Juan Island, Washington  
Tacoma, Washington  
Washington County, Maine

# Appendix II: Comments From the Department of Health and Human Services



DEPARTMENT OF HEALTH & HUMAN SERVICES

Office of Inspector General

Washington, D.C. 20201

OCT - 5 2001

Ms. Janet Heinrich  
Director, Health Care--Public  
Health Issues  
United States General  
Accounting Office  
Washington, D.C. 20548

Dear Ms. Heinrich:

Enclosed are the Department's comments on your draft report, "Emergency Medical Response: Reported Needs Are Wide-Ranging, With Lack of Data a Growing Concern." The comments present the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

The Department also provided extensive technical comments directly to your staff.

The Department appreciates the opportunity to comment on this draft report before its publication.

Sincerely,

A handwritten signature in cursive script that reads "Janet Rehnquist".

Janet Rehnquist  
Inspector General

The Office of Inspector General (OIG) is transmitting the Department's response to this draft report in our capacity as the Department's designated focal point and coordinator for General Accounting Office reports. The OIG has not conducted an independent assessment of these comments and therefore expresses no opinion on them.



**Comments of the Department of Health and Human Services on the General  
Accounting Office Draft Report, "Emergency Medical Response: Reported Needs Are  
Wide-Ranging, With Lack of Data a Growing Concern"**

General Comments

The Department of Health and Human Services believes that overall the General Accounting Office's (GAO) draft report is well written and accurately reflects program activities past and present. Although the report was completed before the September 11 terrorist attack, its key themes and findings are even more relevant at this time. We believe that GAO's report to Senators Collins and Feingold should stress these issues. The case for consistent national Emergency Medical Services (EMS) data can be made even more strongly now, and GAO might consider emphasizing that point more strongly. Detailed below are several comments:

The Department's Centers for Disease Control and Prevention (CDC) Preventive Health and Health Services (PHHS) Block Grant does not specify how States should use Block Grant funds (page 14). The PHHS Block Grant is a congressionally mandated grant given to 61 grantees who decide how and where to spend these funds according to Healthy People 2000/2010 national health objectives. The text, however, implies that CDC specifically targets certain activities, which does not accurately reflect the block grant concept.

The report extensively discusses the "*EMS Agenda for the Future*," but does not mention two *Emergency Medical Services for Children Five Year Plans* supported by the Department's Health Resources and Services Administration (HRSA) Maternal and Child Health Bureau. Many stakeholders throughout the Nation were involved in the development of these plans and these plans serve as road maps for many States and organizations. The 2001-2005 Five Year Plan specifically addresses information systems and evaluation, and other objectives which should result in systems improvements.

For Fiscal Year 2001, the HRSA Office of Rural Health Policy has a total of \$1.4 million for rural EMS systems. Of this amount there are: four outreach grants for a total of \$714,000 in four States (Montana, Michigan, Idaho and Colorado); two Network grants for a total of \$385,174 in two States (Alaska and New Mexico); and three rural Automatic External Defibrillator demonstration projects totaling \$105,000 in three States (Maine, Vermont and Wisconsin).

The GAO draft report contains no recommendations. We believe that recommendations would have substantially strengthened the impact of the report on a public health program of this magnitude.

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