CHAPTER 24
Enhancing Emergency Response Capabilities to Increase Survivability

KEY TOPICS

- emergency medical services (EMS)
- emergency medical technician (EMT)
- fire/rescue response
- training

GOALS

- Study the present condition and anticipated demands of demographic conditions and trends affecting emergency response systems relative to Iowa highways and motor vehicle crashes.
- Develop and implement a model comprehensive approach that will ensure appropriate and timely response to the emergency needs of crash victims.
- Develop and implement a plan to increase education and involvement of EMS personnel in the principles of traffic safety.
- Continue and enhance accurate reporting of injury, medical, and fatality through the health department—provide data for improving systems.
- Develop and implement technological applications involving intelligent transportation systems (ITS) to ensure more rapid detection and response to highway crashes.

BACKGROUND

Only 35 years ago, the U.S. fatality rate was a horrific 5.6 deaths/100 million vehicle miles traveled (MVMT). Those injured in crashes were as likely to be transported to a hospital in a hearse as an ambulance, and attendants were left to ring the bell at an emergency ward, if it was after hours, and then the doctor would be called from home. EMS was created only after a 1966 National Academy of Sciences report demonstrated that an American wounded on the battlefield in Vietnam was more likely to survive than someone injured in an automobile crash back home.

Steven B. Gayle, International President, Institute of Traffic Engineers (ITE)

Today—following extensive efforts to redesign vehicles and roadways for safety—the motor vehicle fatality rate is down to 1.5 deaths/MVMT. Nevertheless, in 1999 approximately 41,600 people lost their lives in U.S. motor vehicle crashes.

Public safety is a basic ingredient in community quality of life. We recognize the ever-present travel-related risks that face us and have confidence

that our traffic management, law enforcement, fire protection, and emergency medical services will appear when and where needed to keep us out of harm's way or carry us to safety. Our public agencies strive to meet these needs but are under increasing pressure as Iowa's population demographics change and the public's expectations for levels of response and levels of technical care increase.

No amount of preventive action will eliminate all crashes and injuries from the highway. The minutes directly following the sustaining of traumatic injuries are often critical to saving the victim's life or reducing the effects of injuries.

Emergency response refers to fire, rescue, and emergency medical services. Both the timeliness and the level of expertise within these response modes are critical factors in the equation. Emergency care scenarios are markedly different in urban, rural, and remote settings and require strategies tailored to meet the realities of each.

Many crash victims die before emergency medical technicians or other emergency responders arrive at the scene. These goals and potential strategies are intended to address the needs for management techniques, coordination practices, training, and equipment for fire, rescue, and emergency medical responders. The strategies in this chapter are also intended to reduce emergency responders' arrival time and to implement bystander care programs that can be used until appropriate personnel do arrive.

NATIONWIDE

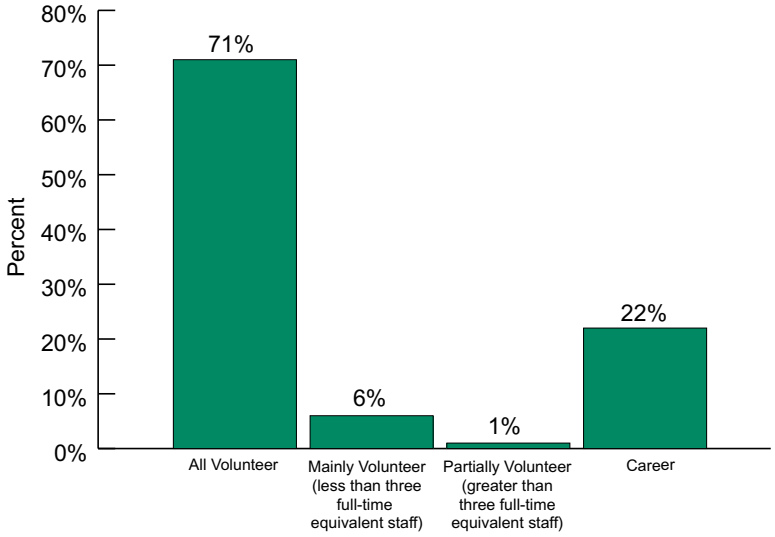
The diverse nature of emergency response systems throughout the country in urban and rural settings and the way they are structured through a wide range of funding and management systems complicate the process of identifying and promoting best practices.

The U.S. Department of Transportation recognizes the need for emergency care for crash victims and the system of response needed to ensure it is available. The ITS Public Safety Group has been commissioned to address ways that emerging technologies might be applied to enhance dispatch and routing of adequate emergency services in the critical first moments following a crash.

IOWA

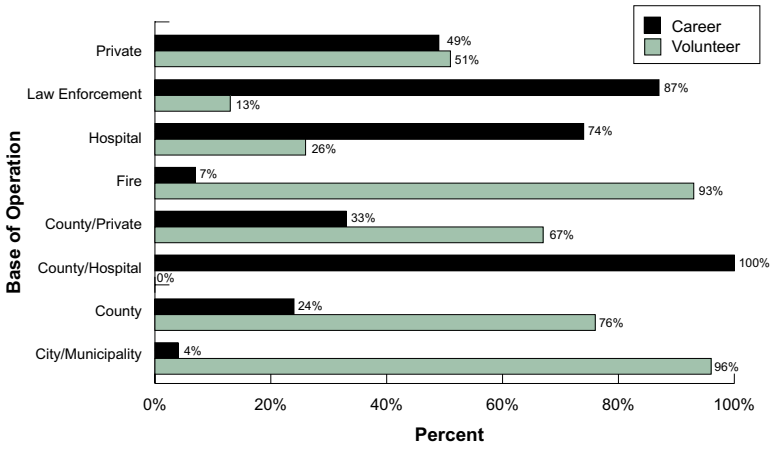
Iowa faces changing rural demographics that affect the availability of people and equipment to respond to highway crashes, especially during normal daytime work hours when many of the local volunteers are working away from the community.

Iowa EMS Providers by Personnel Type



Effective trauma systems can improve the survivability of severe crashes for people in near-death situations. Iowa has a wide range of resources and community dynamics that shape a very diverse emergency response system (see figures). To continue to provide adequate care to all Iowans, it will be necessary to maintain and evaluate an Iowa Trauma Care Delivery System that provides effective protocols for destination triage, treatment, and hospital transfer, and ensures adequate air and ground transportation that meets the changing demographics and expectations of Iowa crash victims.

Iowa EMS Providers by Personnel Type and Base of Operation

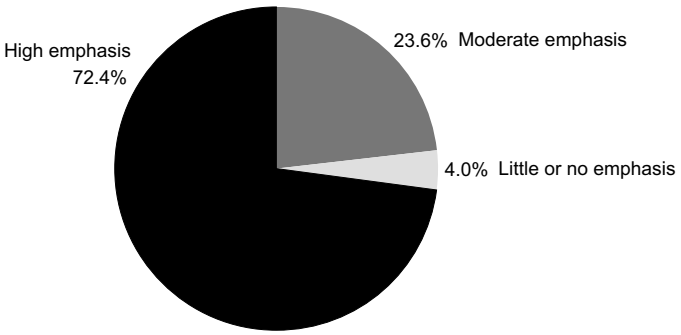


Iowa Public Opinion

Iowa SMS Public Opinion Survey

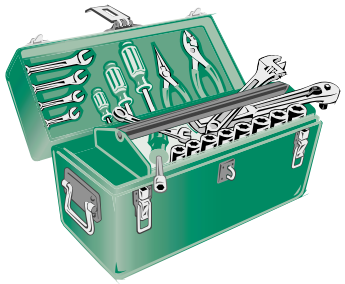
The 1999 Iowa Safety Management System (Iowa SMS) *Iowa Strategic Highway Safety Plan* included a number of potential strategies for dealing with these safety elements. The Iowa SMS public opinion survey asked over 1,000 Iowans whether they would support these strategies.

Iowa Public Opinion on Emergency Response Emphasis



- Over 70% of respondents indicated the goal to increasing emergency response efforts should receive high or moderate emphasis over the next five years (see figure).

POTENTIAL STRATEGIES



Legislation, Policy, and Enforcement

- Support the passage of legislation requiring dispatch training for EMS dispatchers.
- Require emergency medical training for all public safety emergency response personnel, including police.
- Study "state- to local-level transference of costs" impact on emergency services statewide.
- Review training programs and the tuition assistance structure and distribution from state to local entities.
- Develop an operations funding stream to create and maintain an acceptable level of service readiness throughout the diverse statewide delivery system.
- Provide support and involvement in the development and implementation of the Iowa Trauma Care Delivery System through appropriate legislative or policy implemented and less formal methods.
- Recommend appropriate training in emergency traffic control for all EMT, fire, and rescue personnel.
- Endorse multidisciplinary incident management statewide and provide training (Oregon model).
- In cooperation with the Iowa Department of Public Health, design and implement a curriculum to be incorporated into current EMS continuing education programs and EMS service programs that cover the principles of highway safety and injury prevention. This initiative

would include the principles of traffic safety and injury prevention as part of the EMS educational core contents and would integrate local and county EMS systems into the Safe Communities effort.

- Implement and/or enhance implementation of an Iowa Trauma Care Delivery System in Iowa.

Education and Public Awareness

- Implement bystander care training programs targeting new drivers, rural residents, truck drivers, and tow truck operators on a volunteer basis.
- Promote and support the Bystander Trauma Care training program throughout Iowa.
- Develop and support integrated EMS, public heath, public safety information, and program activities.
- Involve trauma care professionals in public awareness and youth education activities.
- Endorse multidisciplinary incident management statewide and provide training (Oregon model) (see Successes and Strategies Implemented section in this chapter).

System Operations and Technology

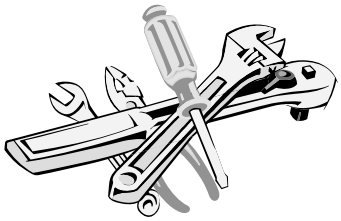
- Commission an investigative report on the Iowa highway emergency response systems in Iowa as related to vehicle crashes. Include present multidisciplinary conditions, projected demographics, and other appropriate perspectives for policymakers and practitioners (see Successes and Strategies Implemented section in this chapter).
- Develop models to optimize EMS staffing patterns for prehospital care to include recruitment and retention strategies.
- Develop and implement an emergency preparedness model in three high-incident interstate highway settings (urban, rural, and wilderness), and use this demonstration to study their effectiveness in reducing fatalities and health costs.
- Implement emergency medical dispatch programs for dispatchers who process EMS calls.
- Ensure statewide upgrade of the wireless 911 system to allow for automatic caller location.
- Continue 911 technology and monitor applications of emerging technologies (e.g., global positioning system [GPS]) for EMS improvement.

- Support the study of emergency response patterns with respect to roadways, crash sites, and other features such as locations of dispatch points and destinations (trauma centers) by enhancing the available data layers and mapping capabilities of the analysis tool GIS-ALAS (Accident Location and Analysis System on a geographic information systems platform).
- Develop and support multi-agency and multidiscipline program activities to improve systems and communication on emergency response issues. Crash data alone are unable to convey the magnitude of the medical and financial consequences of the injuries resulting from motor vehicle crashes or the success of highway safety decision making to prevent them. Outcome information describing what happens to all persons involved in motor vehicle crashes, regardless of injury, is needed. This initiative will develop and implement integrated information systems and highway safety activities.

Other Initiatives

- Support data linkage activities to include a Crash Outcome Data Evaluation System (CODES) for the state of Iowa.
- Support activities of the Strategic Traffic Records Advisory Committee (STRAC) in the development of integration highway safety information systems.
- Support the implementation of the Model Minimum Uniform Crash Data Elements in Iowa.
- Pilot in an urban, rural, and wilderness area an emergency response system that integrates all emergency response agencies to be significantly prepared for such severe crashes. While interstates have the lowest fatality rate of any highway types, they also have one of the highest densities of fatalities because of the higher volume of traffic.

SUCCESSES AND STRATEGIES IMPLEMENTED



- The Iowa SMS Coordination Committee has identified the need for a report on Iowa's emergency response systems as related to vehicle crash response and Iowa's changing demographics. Funding was approved in April 2001.
- Continue support of the Iowa Law Enforcement Emergency Care Provider Program.
- Continue to develop the area of investigation initiated by the Iowa SMS pilot project "Changes in Emergency Response Patterns Due to the Construction of the Avenue of the Saints in Washington, Henry, and Lee Counties in Iowa."

- The Emergency Response Information System (ERIS) is documenting the boundaries and assets available in various EMT and fire rescue districts throughout the state. Funding and technical assistance is provided through Iowa SMS, the Iowa Department of Health, the Iowa Governor's Traffic Safety Bureau, Iowa Fire Service Training Bureau, and the Center for Transportation Research and Education at Iowa State University.
- The Iowa Highway Emergency Response Training (IHERT) project was approved by Iowa SMS in January 2000. This project is conducting a needs assessment survey to determine emergency response training needs throughout Iowa.
- Iowa SMS and Iowa Governor's Traffic Safety Bureau have funded local multidisciplinary team development and distribution of "incident management" handbooks to coordinate resources and reroute traffic following highway crash incidents.

NOTE

The potential strategies in this chapter do not represent specific recommendations of the Iowa SMS Coordination Committee or any agency, group, or individual represented in Iowa SMS. The strategies represent a range of alternatives for legislators, department or agency directors, local governments, and citizen groups to consider when they elect to address a specific highway safety concern.

This toolbox is a living document that will continue to provide information, direction, and ideas for highway safety decision makers. Any strategies selected for implementation by Iowa SMS or any other entity will require further development through identifying potential partners, entities impacted, potential funding, steps for implementation, evaluation, and other pertinent tasks.

RESOURCES

Information in this chapter is drawn from many individuals and sources. Known sources are listed here. **Contributors:** Dick Harmon (primary), Pat Cain, Joyce Emery, Scott Falb, Ray Jones, George Oster, Tim Peterson, and Bob Thompson.

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