

# Feasibility for an EMS Workforce Safety and Health Surveillance System

Emergency Medical Services (EMS) personnel treat an estimated 22 million patients a year (Maguire and Walz, 2004). While on duty, EMS workers frequently encounter two work-related risks: injury and illness. Current research on EMS workforce injury is unsettling and limited compared to research on EMS workforce illness. In 2000, the occupational injury rate was the highest for EMS workers compared to other industries (Maguire et al., 2005). Another study found that the occupational fatality rate for EMS workers was more than twice the national average (Maguire et al., 2002). Yet, even though the extent of EMS workforce occupational illness is better understood, it is still largely limited to infectious disease report analyses mandated by law and the respiratory illness plaguing World Trade Center rescuers.

Certain factors have also made the surveillance of injury and illness in the EMS workforce difficult, such as the unknown size of the EMS workforce. Since emergency medical technicians (EMTs) are housed under a variety of organizations, such as career and volunteer fire departments, commercial ambulance services, third-service public utilities, and rescue squads, this obscures the dimensions of the EMS workforce.

Thus, the goal of this project was to assess the feasibility of conducting occupational injury and illness surveillance for the EMS workforce by: (1) examining the extent of on-the-job injuries and illness among EMS personnel; (2) determining essential characteristics and elements of an EMS workforce illness and injury surveillance system; and (3) assessing the utility of existing data systems.

## Extent of Occupational Injuries and Illness

To examine the circumstances, characteristics, and extent of occupational injuries among EMS personnel, a systematic review of the existing literature was conducted. The literature review examined occupational injuries and illness among EMS personnel related to: (1) firefighter fatalities; (2) nonfatal illness, injury, and infectious disease exposure of firefighters; (3) coronary artery disease and cardiovascular health; (4) EMS workforce illness and injury (general perspective); (5) motor vehicle crash injury and fatalities; (6) violence and assault; (7) infectious disease: needlestick injury, hepatitis B,

hepatitis C, HIV/AIDS; (8) stress and mental health: job stress and burnout, post-traumatic stress disorder; and (9) occupational illness and injury of rescuers at the World Trade Center in 2001.

One of the literature review findings was that musculoskeletal injuries, as a result of overexertion lifting, are one of the common injuries in the EMS workforce. The literature review also found that in crash conditions, the rear compartment in an ambulance is a dangerous place to be; rear occupants are significantly more likely to be killed than front occupants. Additionally, seat belt use in the EMS workforce is low according to a survey conducted by the National Registry for EMTs.

## Method

To determine the essential characteristics and elements of an EMS workforce illness and injury surveillance system, and assess the utility of existing data systems, two groups were created: (1) a steering committee, composed of knowledgeable experts in occupational injury and illness surveillance and EMS operations; and (2) a consensus panel, drawn from officials of EMS stakeholder organizations in the United States, representatives of data collecting or managing entities, and university-based experts in EMS and occupational injury.

## Characteristics of an Illness and Injury Surveillance System and Utility of Existing Data Systems

The steering committee came up with a list of 32 ideal characteristics/elements of an EMS workforce illness and injury surveillance system and rated them in order of importance. The committee also reviewed 14 data systems/sources, classifying their suitability related to: (1) integration or linkage with existing data systems; (2) use of denominator data to facilitate rate calculation; (3) specific elements for capturing contributing factors and EMS events underway when illness or injury occurred; (4) “user friendliness” of resulting data products; (5) utility for evaluation of prevention efforts; and (6) inclusion of provisions for evaluation of the surveillance system.

The committee classified seven systems as being of medium suitability and classified the remaining seven systems as being of low suitability. No data system received a rating of high suitability. Systems were classified as “medium suitability” for: (1) their accessibility of data for an important component of EMS workforce illness and injury; (2) their current or future potential for providing information on broad sectors of the EMS workforce; or (3) their capacity as a census-sample-based system. Whereas, the systems that were rated as “low suitability” were limited in their scope of surveillance or spectrum of the EMS workforce for which they provided surveillance coverage.

Based on the steering committee’s findings, the consensus panel agreed that the most effective approach to surveillance of EMS workforce illness and injury was to draw upon several existing systems. Thus, the consensus panel adopted the language “Surveillance Program” instead of “Surveillance System.” The consensus panel also came into agreement upon the essential and desirable elements and characteristics of an EMS workforce illness and injury surveillance program (see table below).

### Characteristics and Elements of an EMS Workforce Illness and Injury Surveillance Program

Characteristics/Elements	Consensus Rating
1. Capture information from a variety of available data sources or create new data sources	Essential
2. Capture information regarding the injury or illness event (including specific EMS activity) at the time of the injury or illness	Essential
3. Capture denominator data	Desirable
4. Standardized coding schemes	Essential
5. Facilitate systematic analysis	Essential
6. Generate technical and non-technical output that is user friendly	Essential
7. Include ongoing planning and evaluation	Essential
8. Provide outputs useful for evaluation of preventive measures	Essential
9. Be responsive to the needs of the EMS community at the local, State, and national levels	Essential

Based on the work done in reaching a consensus on surveillance and prioritizing surveillance characteristics, the consensus panel developed a conceptual model for EMS workforce illness and injury surveillance. The model describes the pathway of data collection, analysis and dissemination of results, the use of data in developing preventive interventions and program evaluation, and surveillance program evaluation.

### Conclusions

The consensus panel concluded that currently in the United States, no single data system satisfies the diverse requirements of a comprehensive surveillance data source for EMS workforce illness and injury. However, the panel did note that some existing systems (e.g., CFI, FARS, and NEISS-Work) already contribute to or show potential in increasing our understanding of EMS workforce illness and injury. Thus, the panel found that rather than creating a new system, the best approach is an integration of data systems.

The panel suggested that those who manage data systems should consider sharing systems, and data owners and other data providers should be encouraged to explore new approaches to data aggregation to address EMS issues. The panel agreed that EMS stakeholders should work together with data holders/owners to encourage analysis and dissemination of information on EMS workforce illness and injury. Lastly, the panel stressed that a national EMS workforce injury and illness surveillance program should be established, spanning surveillance to prevention because, ultimately, the goal of the program is to improve the health and safety of EMS workers.

### How to Order

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