EMS1.com News

EMS Topics > Paramedic Chief > Articles

5 causes of high injury rate in EMS providers

NIOSH and NHTSA collaborated to use emergency department visit data to identify the five primary types of injury events experienced by EMS providers

Nov 6, 2017

By Audrey A. Reichard, Gamunu U. Wijetunge, Suzanne M. Marsh, Srinivas Konda

EMS personnel experience injuries at a higher rate than workers in many other occupations. In addition to suffering the immediate pain of an injury, personnel may lose time at work and be forced to limit activities outside of work.

Injuries with long-term effects, such as chronic pain or physical disability, can have more serious impacts on the worker. These impacts can include wage or job loss, strains on relationships with family and friends and psychological issues such as depression or anxiety. Beyond the effects faced by the injured worker themselves, the workforce can suffer from decreased productivity, inadequate staffing levels and other increased costs.

The injury risk to EMS personnel is high. (Courtesy photo)

With the Occupational Outlook Handbook projecting that the demand for EMTs and paramedics will increase 24 percent from 2014-2024, it is vital that injuries to workers be prevented to protect and preserve the workers and the workforce. However, you can't prevent what you don't understand. Therefore, the first step in being able to prevent injuries is to know how many there are and what is causing them.

The National Highway Traffic Safety Administration's Office of Emergency Medical Services joined forces with the National Institute for Occupational Safety and Health in an effort to understand work-related injuries occurring to EMS personnel. They interviewed a sample

of EMS personnel treated in emergency departments for work-related injuries during a four-year period (July 2010 through June 2014). These injuries included exposures to harmful substances. The data were weighted in order to produce national estimates of the number of EMS personnel treated in EDs for work-related injuries.

HOW MANY EMS PERSONNEL ARE INJURED EACH YEAR?

On average, 22,000 career and volunteer EMS personnel visited emergency departments each year for work-related injuries. The rate of injuries among career EMS personnel treated in the ED was more than four times higher than the rate for all workers.

Of course, there are more EMS personnel that seek care at other places or even self-treat, therefore there is no way to count every injury. Because we relied on data readily available to us to describe the injury risks to EMS personnel, we recognize that we are only providing one piece of the bigger picture.

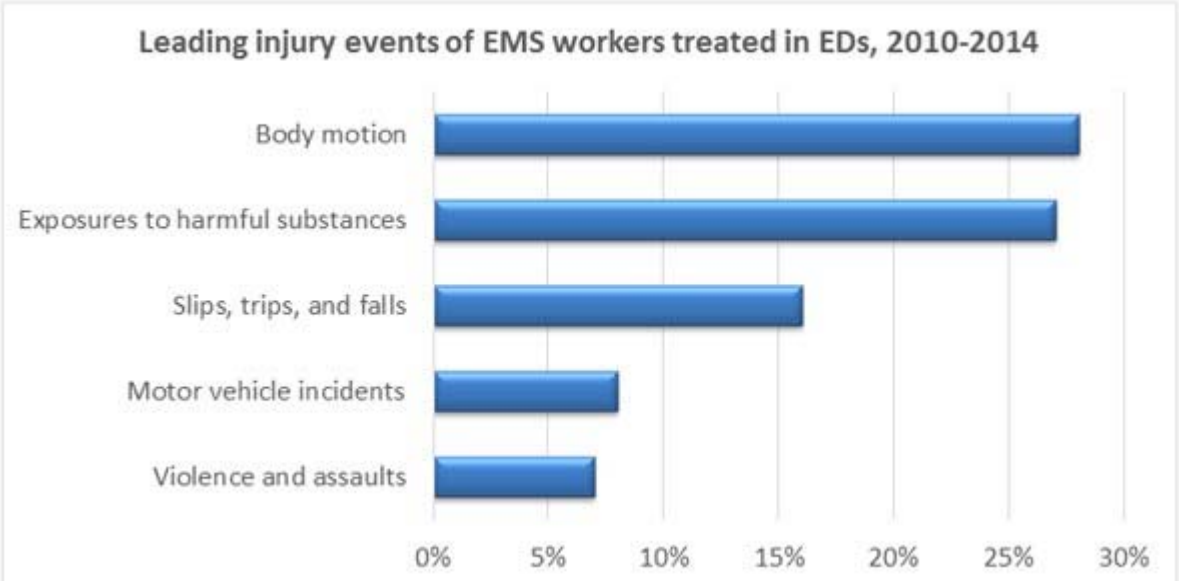
WHO IS BEING INJURED IN EMS?

Three-quarters of injured workers were full-time, career EMS workers and an additional 10 percent were part-time, career workers. The fact that career workers had more injuries than volunteers may simply reflect that they spent more time in the field.

With younger workers outnumbering older workers in the EMS workforce, it follows that more than 40 percent of injured workers were between 18 and 29 years-old. Similarly, more than half of injured EMS personnel had less than 10 years' of experience. Two-thirds of injuries occurred to male EMS personnel who represent about two-thirds of the workforce. Thus, males and females were equally likely to sustain an injury.

HOW ARE THE INJURIES HAPPENING?

This study identified five primary types of injury events. Each event is detailed below along with scenarios described by injured EMS personnel, with some modifications to protect confidentiality.



Data source: Reichard AA, Marsh SM, Tonozzi TR, Konda S, Gormley MA (2017): Occupational Injuries and Exposures among Emergency Medical Services Workers, Prehospital Emergency Care. Available at: http://dx.doi.org/10.1080/10903127.2016.1274350

---

1. Body motion

EMS personnel were most commonly treated in EDs for body motion injuries as a result of excessive physical effort, awkward posture or repetitive movement. Many of these injuries were back and neck sprains and strains. Most personnel with body motion injuries were transferring, carrying or lifting a patient at the time of their injury. Nearly half of those performing patient handling indicated that the patient was heavy, overweight or obese.

Example body motion injuries described by EMS providers:

> *An EMS provider and her partner were loading a patient onto a stretcher when the hydraulics on the stretcher broke and the stretcher collapsed. She caught the weight of the 350 pound patient and 100 pound stretcher. She held it for 5 minutes while waiting for assistance.*
>
> --
>
> *On a 9-1-1 call to a patient's home, the EMS provider and his partner were bringing the patient down the steps in a stair chair. The provider was at the bottom of the chair. The patient shifted her balance in the stair chair and the provider had to compensate.*
>
> --
>
> *A provider was helping carry a patient on a backboard from the patient's house to the ambulance. The patient's house was very narrow and required a lot of bending and twisting to get him out.*

2. Exposure to harmful substances

The second most common reason for EMS personnel to seek ED treatment was exposure to harmful substances, which mostly involved exposure to blood or respiratory secretions. About one-fifth of

these injuries were needlesticks. Other types of exposures included patients spitting and coughing. Nearly all personnel reported wearing gloves at the time of exposure, but most were not wearing a protective gown, mask or face shield.

Example exposures to harmful substances described by EMS providers:

> *The EMS provider was returning from the hospital. She was in the back of the ambulance cleaning up. She went to pick up a pair of gloves on the floor and was stuck by a needle underneath the gloves.*
>
> --
>
> *The EMS provider was watching her partner intubate a patient. The patient coughed up blood and respiratory secretions from her mouth, splashing the provider in the face.*
>
> --
>
> *An EMT started an IV and put the IV needle down in the ambulance. His partner picked up the needle to dispose of it and accidentally stuck his thumb with the needle.*

3. Slips, trips and falls

In 40 percent of slips, trips and falls, the EMS provider was going up or down steps or a curb. Other slips, trips and falls were attributed to getting in or out of an ambulance or slipping on wet or slick surfaces. Nearly half of slips, trips and falls occurred while a provider was pushing, pulling, lifting or carrying a patient or equipment.

Example trips and falls described by EMS providers:

> *The EMS provider quickly stepped out of the ambulance with his jump bag and his foot landed on uneven concrete.*
>
> --
>
> *The EMS provider had just arrived at a scene to get a patient from a residence. She was rushing in with the stretcher when she stepped in a hole and twisted her knee.*

4. Motor vehicle incidents

Motor vehicle incidents included collisions, sudden stops and swerving, with almost two-thirds involving a collision with another motor vehicle. Most motor vehicle incidents involved ambulances with nearly half of EMS personnel injured while riding in the front compartment and half injured while riding in the patient compartment. However, those in the front compartment were much more likely to be wearing a seatbelt. In almost 75 percent of incidents, lights and sirens were not being used and very few personnel identified issues with the weather, road, lighting or vehicle that may have contributed to the incident.

Example motor vehicle incidents described by EMS providers:

> *The EMS provider was in the back of the ambulance treating a patient. The ambulance was cut off by another vehicle and ended up hitting the other vehicle. The EMS provider and his partner were both unrestrained on the bench and slid into each other and the cabinetry.*
>
> --
>
> *The EMS provider was in the back of the ambulance on her way to a 911 emergency call. The ambulance was speeding around a corner while she was in the process of moving back to her seat. She was thrown into the action counter in the back of the ambulance and landed on her arm.*

5. Violence and assaults

Injuries related to violence and assaults were the least common injury event identified in this study, but it only captured injuries that resulted in the provider going to the ED. There are likely many more incidents of violence against EMS personnel that don't result in physical harm requiring immediate medical treatment. In almost all instances, the perpetrator was a patient and nearly half of perpetrators appeared to be under the influence of alcohol. Police reports were made in less than half of all incidents.

Example violence and assault incidents described by EMS providers:

> *When the EMS provider got to the scene the patient was lying on the ground. When the provider went over to help him the patient became very combative. As the provider was attempting to restrain him, he bit her on the hand.*
>
> --
>
> *The EMS provider was on a call and the person he was treating was intoxicated. The patient didn't seem to be combative, but when the provider was looking in his box for supplies, the patient swung his arm and hit him on the side of his face.*

HOW CAN INJURIES TO EMS PROVIDERS BE PREVENTED?

Injury prevention is the responsibility of both the employer and employee. This includes joint participation in establishing and maintaining a culture of safety that empowers team members, improves the safety knowledge of leaders and practitioners and creates an open environment to encourage reporting of near-misses. An effective safety culture can lead to fewer risks and adverse events and, consequently, a reduction in worker injuries [1].

Employers can contribute to safety culture and injury prevention in many ways that include:

- Offering education and training
- Providing safety equipment

- Developing and enforcing policies and procedures
- Addressing potential injury hazards reported by employees

To reduce body motion injuries, employers can train workers in proper lift and transport techniques.

Exposure to blood and body fluids may be reduced by insuring workers have the needed personal protective equipment, including retracting needles, so that they can follow Standard Precautions. Employers can also enforce policies requiring employees to adhere to appropriate use of PPE, including wearing safety belts.

Slips, trips and falls may be reduced by training workers to identify and reduce fall risks and by implementing policies requiring durable, slip-resistant footwear.

Employees are also critical to ensuring safety at work by:

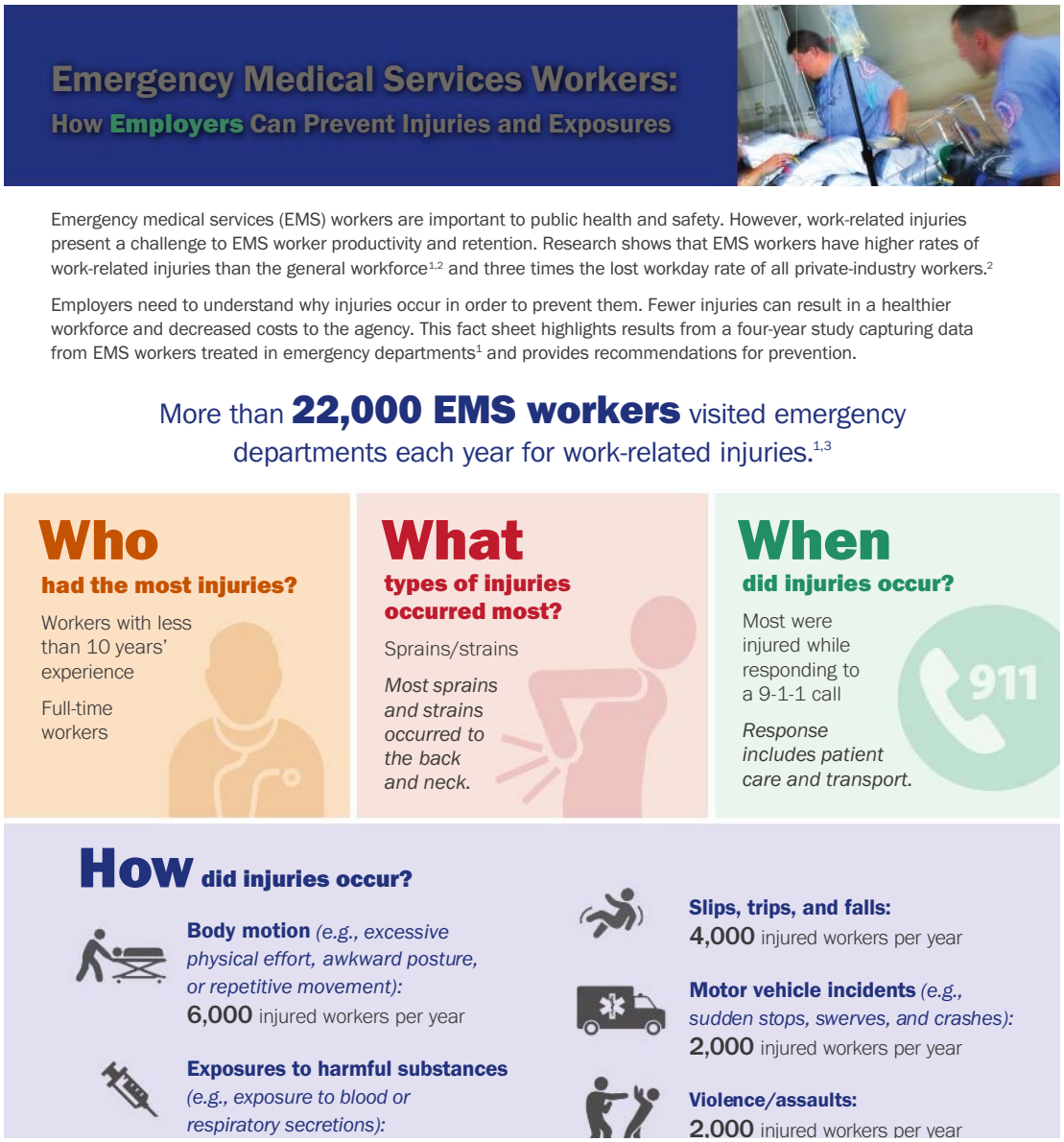
- Identifying problem areas by voicing safety concerns and reporting near misses and injuries
- Using available resources for lifting and transporting patients, like accessible equipment and co-workers to assist with lifts
- Donning available PPE needed to follow Standard Precautions.
- Identifying and addressing potential hazards on the scene to prevent injuries

CONCLUSION

The injury risk to EMS personnel is high. EMS employers can help prevent injuries by providing workers with training and equipment to perform their job safely and by enforcing safety policies and procedures. EMS personnel should advocate for their own safety by discussing safety concerns and near misses as well as by using available resources and equipment.

More injury prevention tips can be found in a recently released fact sheet titled Emergency Medical Services Workers: How Employers Can Prevent Injuries and Exposures.

Emergency Medical Services Workers: How Employers Can Prevent Injuries and Exposures



Author's note: The findings in this paper are based on detailed study results that were published in Audrey A. Reichard MPH, OTR, Suzanne M. Marsh MPA, Theresa R. Tonozzi MPH, Srinivas Konda MPH & Mirinda A. Gormley MSPH, NRP (2017): Occupational Injuries and Exposures among Emergency Medical Services Workers, Prehospital Emergency Care. Available at: http://dx.doi.org/10.1080/10903127.2016.1274350.

About the authors

Epidemiologist Audrey A. Reichard, MPH, OTR; Health Statistician Suzanne M. Marsh, MPA; and Research Fellow Srinivas Konda, MPH, are with the Division of Safety Research at the National Institute for Occupational Safety and Health. Gamunu U. Wijetunge, MPM, NRP, is an EMS specialist with the National Highway Traffic Safety Administration's Office of EMS and a volunteer firefighter/paramedic in Montgomery County, Maryland.

the content of these websites. All web addresses referenced in this document were accessible as of the publication date.

Reference:

1. NHTSA (2013). Strategy for a National EMS Culture of Safety. Available at: https://www.ems.gov/pdf/Strategy-for-a-National-EMS-Culture-of-Safety-10-03-13.pdf.

Tags › EMS Assaults & Self Defense • EMS Education • EMS Training • Injury Prevention • Leadership • NHTSA • Safety • Scene Safety • Violence • Violent Patient Management