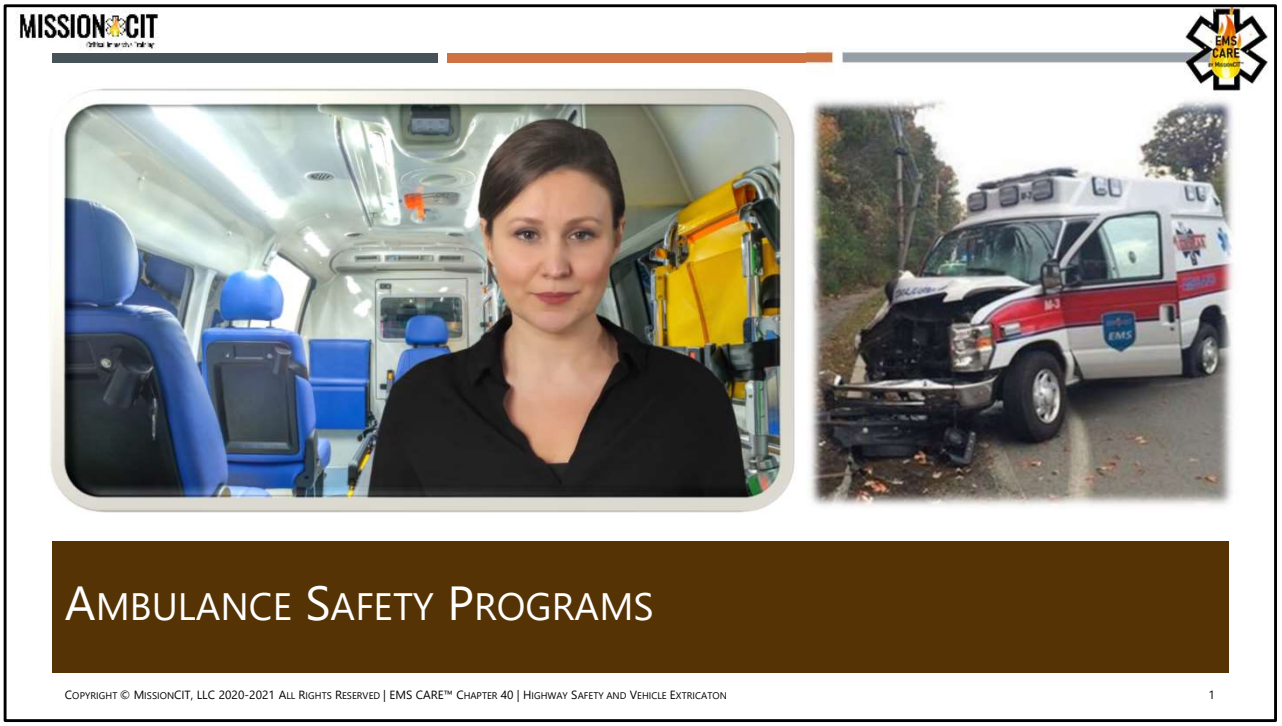
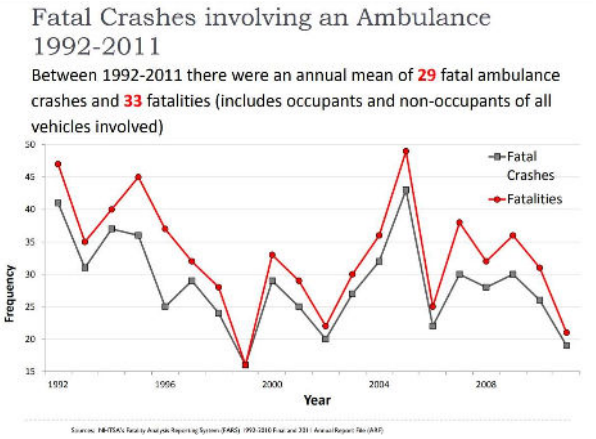


Hello and welcome to the first lesson where we talk about ambulance crashes. These crashes are way more frequent than we'd like, and most times happen because of non-adherence to simple guidelines.

First off, let's get an idea of the seriousness of these crashes, so we understand the importance of following safety standards.

STATISTICS

- NHTSA analyzed data from the last 20 years
- Yearly average – 29 fatal crashes involving ambulance
- 33 fatalities
- 25% happen inside ambulance
- Majority – other driver gets killed
- Non-fatal injuries yearly average – 1500
- 46% of crashes impact the patient



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The NHTSA analyzed data from the last 20 years and found that on average, there are about 29 fatal crashes involving ambulances each year, accounting for about 33 fatalities. Out of these, one-fourth of the fatalities happen inside the ambulance, but in the majority of fatal crashes, it's the driver of the other vehicle who gets killed.

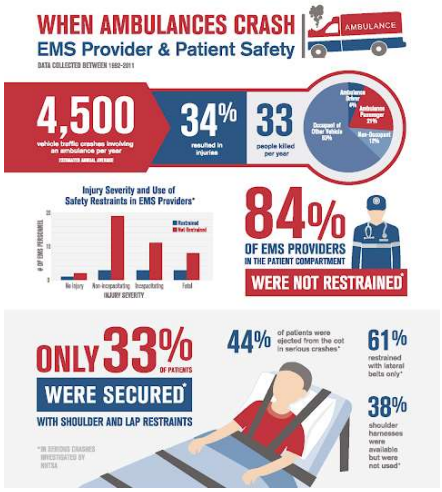
As for non-fatal injuries, data shows that this averages at about 1500 a year due to ambulance crashes. In these crashes, 46 percent of the injuries happen to those

inside the ambulance.

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CAUSES

- Occupants of other vehicles – 61% of deaths
- Passengers in the ambulance – 21%
- Non-occupants – 12%
- Ambulance driver – 4%
- 84% of EMS were not restrained
- Only 33% were secured with lap and shoulder restraints
- 61% of patients secured with lateral belts only
- 44% of patients ejected during crashes



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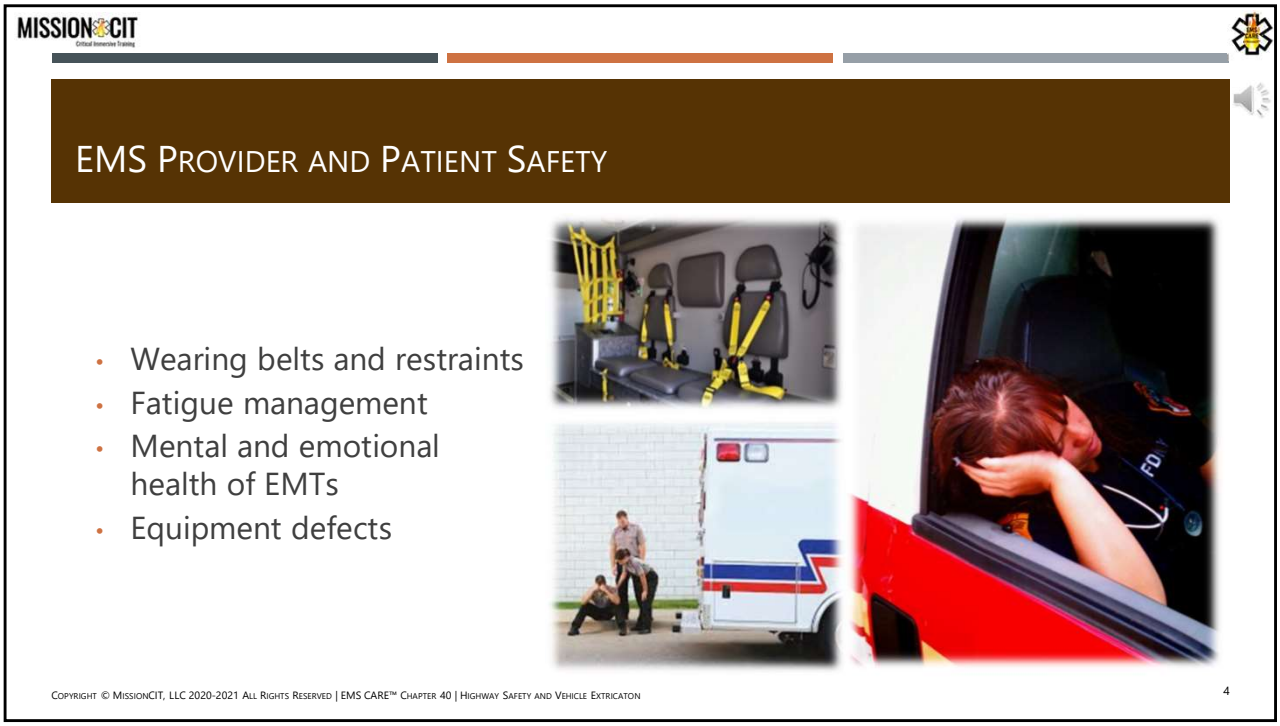
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The NHTSA also analyzed the cause of these fatal and non-fatal crashes and found some interesting insights.

Firstly, the most impacted in these fatal crashes are occupants of the other vehicle as they accounted for 63 percent of deaths. Next are the passengers in the ambulance who account for 21 percent of the fatalities, while the remaining were non-occupants at 12 percent and ambulance drivers at four percent, respectively.

Much of these deaths could have been avoided had everyone buckled up because it was found that 84 percent of EMS providers in the patient compartment were not restrained. Also, only 33 percent of the patients in the ambulance were secured with lap and shoulder restraints, and 61 percent of patients were secured with lateral belts only.

This led to an ejection of 44 percent of patients from the cots during accidents, and what's worse is that 38 percent of shoulder harnesses were available, but not used. From these numbers, it's clear that not wearing seat belts and restraints is the number one cause of ambulance crashes.



These findings put the responsibility of wearing belts and restraints on the EMS providers, for their safety, as well as that of the patients and other drivers.

The NHTSA also acknowledges that there are other factors such as fatigue of EMS workers that stem from the nature of their work, safety compromises due to mental or emotional conditions, equipment defects, and more that contribute to these ambulance crashes.

To address these issues, it has come up with many programs that aim to reduce crashes and fatalities.

NHTSA Programs

- NHTSA created programs to collect data
- NASS – CDS and GES
- CDS – Passenger vehicle crashes
- GES – Overall big picture to understand trends
- National Driver Register
- Fatality Analysis Reporting System



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The NHTSA has created many programs that collect data, and based on them provide safety guidelines for drivers and work on improving vehicle safety in conjunction with vehicle manufacturers.

The National Automotive Sampling System or NASS is a program responsible for collecting pertinent data, so the same can be used to better understand the causes and outcomes of ambulance crashes.

It consists of two subprograms, namely, the Crashworthiness Data System (CDS) and the General Estimates System (GES). While CDS focuses on passenger vehicle crashes to understand the injury mechanism and the resultant changes to be made to vehicles. GES looks more at the overall big picture to assess the problem and tracks trends based on it.

Similarly, another program called National Driver Register maintains a computerized database of driver records.

The Fatality Analysis Reporting System collects data from crashes and analyzes them to gain insights into the probable causes.

As an EMT, you can be a part of these programs and provide inputs on a vehicle crash that you were a part of.

Ambulance Safety Programs in Connecticut

- State-specific laws and programs
- Report to the State OEMS within 10 days of the occurrence of any accident
- Property or personal injury > $600
- Ambulances must meet safety and design requirements of the Connecticut Department of Motor Vehicles



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Besides the NHTSA programs that are applicable for the entire country, there are also specific laws and programs within the state of Connecticut to ensure road safety for EMS providers.

According to Section 19a of the Public Health and Well-being Act, every EMS organization has to report to the State OEMS Office in writing, within 10 days of the occurrence of an accident that the law enforcement considers as the fault of the EMS driver or poor safety precautions in the ambulance. The organization also has to report if the accident caused personal injury or

property damage worth more than $600.

Also, the state requires that all ambulances meet certain safety and design requirements of the Connecticut Department of Motor Vehicles and complies with all federal requirements for vehicle safety design.

Case Study

- Case Study of a Crash
- Key learnings
  - ✓ Never too much preparation
  - ✓ Secure the patient, equipment, and self
  - ✓ Start treatment before transportation
  - ✓ Update emergency contacts
  - ✓ Use electronic driver monitoring and feedback devices
  - ✓ Keep speed under control
  - ✓ Review SOPs
  - ✓ Make safety ongoing



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Now, you might wonder why you must be a part of any of the federal and state ambulance safety programs. Let's look at a case study that can help you understand the importance of ambulance safety.

It was a snowy morning on January 18, 2014, and an EMT and a paramedic were responding to an emergency medical call. The EMT was driving the ambulance while the paramedic was attending to the patient at the back.

The EMT saw a pair of headlights rushing at him and quickly maneuvered the vehicle away from the oncoming vehicle. There was a loud crash followed by silence.

The patient was safe because he was belted on the cot, and it was his consciousness that provided information about the crash. Also, the paramedic had a head injury that left him unconscious, and it was the patient who took the phone from the paramedic's pocket and called 911. Eventually, it was known that the EMT was driving the ambulance at 37mph while the oncoming vehicle was at 60mph.The EMT suffered bilateral fractures to his lower extremities while the other driver sustained multi-system traumatic injuries and faced death. As for the paramedic, he was intubated and was unconscious, and eventually, both the EMT and the paramedic recovered.

Some key lessons that the EMS community learned from this incident are:

- There's nothing as too much preparation. In fact, the more prepared you are, the better for everyone
- Securing the patient, equipment, and self is compulsory

- It’s good to start some treatment before transportation, so the EMS can remain seat-belted
- Update emergency contacts
- Use electronic driver monitoring and feedback devices for improved safety
- Keep speed under control
- Review SOPs and involve medical directors as needed
- Make safety an ongoing effort

On this note, we end this lesson and in the next one, Missah will take you through seat belts and restraint systems.