Occupational transportation safety challenges:

Contrasting the transportation safety data for Emergency Medical Services with other commercial vehicles

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Politics, Policy and Public Health

Background:

- Ground Emergency Medical Services (EMS) have been identified to have high risk of crash related injury and fatality, however comparative data with commercial vehicles is scant.

"...I’d like to know what can be done so this never happens again..."

Friday July 20th 2007... The worst ambulance crash in USA history

Four Killed in Crash of Ambulance and Semi

July 21, 2007 08:20 AM EDT

VAN WERT, OHIO (AP) — The Ohio State Highway Patrol continues to investigate the crash of an ambulance that killed five people Friday night, including three emergency medical technicians. The crash occurred on Ohio 411 near Nine Mile Road in Van Wert County, about 10 miles southeast of Van Wert.

The ambulance, with four out-of-town emergency Medical Services workers aboard, was heading to a hospital. Troopers say it was struck by a tractor-trailer at the intersection of County Road 176 and County Road 67. The ambulance then burst into flames.

The four victims were identified as 29-year-old John Smith, 35-year-old Tim Rockwell, and 21-year-old Tony Parker. Another two were identified as 14-year-old Martin Jones and 20-year-old Scott Green.

Another emergency medical technician, 26-year-old Mike Thompson and the truck driver, 23-year-old Justin Cooper, were both taken to a hospital. He’s not yet clear whether they suffered any injuries.

The driver of the semi-trailer was also taken to a hospital. He later died.

A spokesperson for the hospital said both were critical.

Emergency personnel throughout the region are also shocked and mourning their own.

"That’s one of our worst scenarios when it’s one of our own," said Ohio State Highway Patrol. "Everyone is a brotherhood."

"It’s going to take time for everyone to recover."

Randy Shaffer, director of Van Wert County Emergency Management Agency, said the accident has had a deep impact.

"It has affected every emergency personnel in the county," he said. "We know it could happen at any time. We need to be ready..."

Shaffer said when a call came in that an ambulance was involved in an accident Friday, he thought every squad in the county should be notified.

"They were doing what they loved..."

Lincero, July 21, 2007

"I love them. They were doing what they loved..."

Lincero, July 21, 2007

"I love them. They were doing what they loved..."

Lincero, July 21, 2007
2 counts of vehicular homicide...  
November 5, 2007 - PA

A 27-year-old ambulance driver died in a crash when the ambulance collided with another vehicle. The vehicle was carrying two patients and was transporting them to the hospital. The driver was charged with vehicular homicide.

Some recent adverse outcomes

UPS and Laundry trucks have very similar design and even more stringent safety requirements to EMS vehicles BUT very different cargo...... 

People are passengers and NOT packages or parcels
**Objective:**
- To identify transportation safety data and data capture systems for EMS vehicle transport in contrast to commercial vehicle transport

**Methodology:**
- Search of online databases for EMS transportation safety and commercial vehicle transportation safety data, over 1996-2005
- Analysis of types of data captured nationally for these two different occupational environments

**Results: Identified relevant databases**
- FMSCA – MCMIS, Safetynet, SafetyStat
- NHTSA – FARS, GES, CDS/NASS
- NTSB -
- Non transportation Professional Association/Organization National Infrastructure -

**FMCSA - Summary**
- Established Jan 2000 as a separate administration within the U.S. DOT, pursuant to the Motor Carrier Safety Improvement Act of 1999
- Primary mission is to reduce crashes, injuries, and fatalities involving large trucks and buses.

**FMCSA - safety mandate**
- Develops and enforces data-driven regulations that balance motor carrier (truck and bus companies) safety with industry efficiency
- Harnesses safety information systems to focus on higher risk carriers in enforcing the safety regulations
- Targets educational messages to carriers, commercial drivers, and the public
- Partners with stakeholders including Federal, State, and local enforcement agencies, the motor carrier industry, safety groups, and organized labor on efforts to reduce bus and truck-related crashes.

**FMCSA - Exceptions**
- Unless otherwise specifically provided, the rules do not apply to —
  - (f)(1) All school bus operations as defined in §390.5;
  - (f)(2) Transportation performed by the Federal government, a State, or any political subdivision of a State, or an agency established under a compact between States
  - (f)(3) The occasional transportation of personal property by individuals not for compensation nor in the furtherance of a commercial enterprise;
  - (f)(4) The transportation of human corpses or sick and injured persons;
  - (f)(5) The operation of fire trucks and rescue vehicles while involved in emergency and related operations;
Motor Carrier Management Information System (MCMIS)

- FMCSA operates and maintains the MCMIS
- MCMIS contains information on the safety fitness of commercial motor carriers
- MCMIS is a collection of safety information including state-reported crashes, compliance review and roadside inspections results, enforcement data, and motor carrier census data
- The Crash Profiles use the National Governors’ Association (NGA) recommended data elements reported to FMCSA by states through the SAFETYNET computer reporting system

MCMIS - NGA reportable crash

- Must involve:
  - a truck (a vehicle designed, used, or maintained primarily for carrying property, with a gross vehicle weight rating or gross combination weight rating of more than 10,000 lbs.)
  - bus (a vehicle with seats for at least nine people, including the driver)
- The crash must result in:
  - at least one fatality
  - one injury where the person injured is taken to a medical facility for immediate medical attention; or
  - one vehicle having been towed from the scene as a result of disabling damage suffered in the crash.

SafeStat Detailed Summary

Motor Carrier SafeStat Score

- Accident SEA
- Driver SEA
- Vehicle SEA
- Safety Mgmt SEA

Safety Data:
- Driver Violations (Critical & Acute from last CR)
- Driver OOS Violations (Roadside Inspections)
- Jumping OOS Orders (Roadside Inspections)
- Moving Violations (Roadside Inspections)

Safety Data:
- Vehicle Violations (Critical & Acute from last CR)
- Vehicle OOS Violations (Roadside Inspections)

Safety Data:
- Safety Mgmt Violations (Critical & Acute from last CR)
- HAZMAT Violations (Critical & Acute from last CR)
- Enforcement History Closed Cases (Enforcement Database)
- HAZMAT OOS Violations

Safety Data:
- Recordable Crashes

Indicators:
- Accident Involvement Indicator (AII)
- Recordable Accident Indicator (RAI)
- Enforcement History Indicator (EHI)
- Safety Mgmt. Review Indicator (SMRI)
- HM Review Indicator (HMRI)
- Enforcement Severity Measure (ESM)
- Vehicle Inspections Indicator (VII)
- Vehicle Review Indicator (VRI)
- Driver Inspections Indicator (DII)
- Driver Review Indicator (DRI)
- Moving Violation Indicator (MVI)

How are SafeStat scores calculated?

1. Motor Carrier Safety Data
2. Algorithm Calculates Safety Status of Carrier
3. Access SafeStat results for individual carriers via A&I Online.

FMCSA - Hours of Service Regulations

Summary of the New Hours of Service Regulations

- A driver may not drive more than 11 hours after coming on duty following a 10-hour consecutive off-duty period.
- A driver may not drive more than 10 consecutive hours after coming on duty following a 9-hour consecutive off-duty period.
- A driver may not drive more than 8 consecutive hours after coming on duty following a 8-hour consecutive off-duty period.
- A driver may not drive after coming on duty following a 7-hour consecutive off-duty period.

Employee event:

- Driver and owner-operator receive a penalty for a period of 3 consecutive days failing to keep an accurate daily logbook, records, and other records on duty status in place of AOC.

The Motor Carrier of North America (CMC) and the American Trucking Associations (ATA) have adopted MCMIS - NGA reportable crash

FMCSA HOS – detailed info

Federal Motor Carrier Safety Administration

Hours of Service Regulations - Effective October 28, 2007

Mandatory Rest Periods:

- 10 hours off-duty for an 8-hour on-duty period
- 11 hours off-duty for an 11-hour on-duty period
- 14 hours off-duty for a 14-hour on-duty period

Emergency Exemptions:

- Inclement Weather
- Medical Emergencies
- Ambulance Use
- Equipment Breakdown
- Public Safety
- Legal Exemptions

Proposed Rules

- Final rule

Enforcement:

- Index of frequently enforced regulations
- Enforcement database
- Compliance audit coordination
- Field office support

HOS Enforcement Methods

- roadside inspection
- electronic logging device
- driver interview
- property or vehicle inspection
- true involvement
- traffic accident
- law enforcement
- other regulatory entity
EMS ground transport safety data

- NTSB – one investigation – 1979, no system wide data capture (unlike aviation EMS)
- Some states (PA, MO, NY) have fatality reporting systems – but data incomplete
- NHTSA
  - FARS – incomplete mortality data
  - GES/NASS/CDS – sample of low #
- NEMS Memorial – incomplete – voluntary – verified
- EMSClosecalls.com, EMSNetwork.org – voluntary, anecdote
- No denominator data
- No monitoring system in place
- No transport management oversight
30 years later, ~1,600 fatalities and still the same problem

Pennsylvania Code

Voluntary, verified ...

Voluntary, ? anecdote ...

Results:

- Estimates for ambulance fatality per mile traveled are 3 to 50 fold the rate of large truck fatal crashes
  - Large trucks - 2.2 fatal crashes per 100 million miles traveled in 2005
  - Ambulance - general estimates of 7.7 to 109 fatal crashes per 100 million ambulance miles traveled
- Estimates of 37 truck crash injuries per 100 million miles, far well exceeded by ambulance estimates of crash injury of 308 to 4,360 injuries per 100 million ambulance miles traveled
- Ambulance vehicle occupant crash fatality percentage is double that for large trucks.

Results:

- FMCSA (EMS exempt)
  - extensive data on both numerator and denominator aspects of truck travel safety – for companies, vehicles and drivers (including hours of service)
  - Safety performance monitoring and targeted safety guidance
- NHTSA (re: EMS)
  - minimal with incomplete numerator data for both morbidity and mortality and virtually non-existent denominator data
  - No safety monitoring nor any targeted safety guidance
- NTSB (re: Ground EMS)
  - One crash report, 1979
  - No safety monitoring, no recommendations since 1979
Valuable information... EMS exempt.

Major crash investigation - NTSB comprehensive analysis for commercial vehicles.

Law enforcement and Fire data.

Discussion:
- Existing data point clearly to ground EMS transport as being hazardous
- Exemptions from FMCSA oversight
- Scant data capture by NHTSA
- Lack of attention by NTSB
- No formal oversight, rather voluntary (even anecdote), absent of structured accepted transport systems safety data capture remains

Why isn’t EMS ground transport data captured by FMCSA?

Why ISN’T EMS on the NTSB’s “Most Wanted List”??
Conclusion:

- There appears to be wide disparity in transportation safety between EMS and commercial transport per mile traveled, with a safety record for EMS ground transport per mile traveled, at least an order of magnitude worse than trucks.
- The FMCSA database provides extensive detail on many aspects of truck transport safety - similar national data do not exist for EMS transport.
- FMCSA provides monitoring, oversight and safety guidance to non-EMS transport.
- There is no comprehensive monitoring or safety performance oversight for EMS transport.
- NTSB provides crash investigation and safety recommendations for commercial vehicles and monitoring for aviation EMS – but not for ground EMS since 1979.

Breaking News!!
National Academies
TRB EMS/Medical Transport Safety Subcommittee – Jan 16, 2008

87th Annual Meeting - January 13-17, 2008

Emergency Medical Services Safety Subcommitteee, AMB116G
Wednesday, January 16, 2008, 1:30 PM – 2:30 PM, Marriott
Room 601-602, Crystal Ballroom, Marriott
By permission of the Transportation Research Board (TRB).