

5th Starpoints Symposium,
Saturday, May 30th, 2009

The Ride of Your Life: Managing the Risks and Hazards of Ambulance Transport



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Nadine Levick MD, MPH

- ▶ Emergency Medicine Physician and Public Health Academic, (USA & Australia)
- ▶ Founder of EMS Safety Foundation
- ▶ Chair, National Academies Subcommittee TRB EMS Transport Safety, USA
- ▶ Recipient, International Society of Automotive Engineers, Women's Leadership Award for EMS Safety



- ▶ To quote Steve "Sid" Caesar – Director IHS ES

"We want everyone to get home safely each day"

Outline

- I. Review of data on ambulance crashes and safety standards and guidelines that exist for the ground EMS
- II. Identification of ground EMS transport safety issues, hazards and areas of risk to patients, providers and public
- III. Highlight unacceptable mythology and challenges to advancing EMS transport safety
- IV. Profile innovation, new safety technologies and strategies and knowledge transfer to enhance safety and reduce risks of ground EMS and patient transport

Real world answers to real world questions -

- ▶ What features will enhance safety of my new vehicle purchase?
- ▶ What color scheme do I want on my vehicle to make it safest?
- ▶ Do I need a helmet, and if so which one?
- ▶ What policies offer the safest system?
- ▶ How do I get my team to address safety issues?
- ▶ What data should I collect when something goes wrong, and how to analyze it?

Emergency Medical Service Transport

- ▶ What are the transport safety issues that pertain to this important public service and public safety industry?
- ▶ What do we know of the risks and hazards and how can we measure these ?
- ▶ How can the safety of this transport system be optimized?

<http://www.objectivesafety.net>



Firstly!

▶ An accident ?

- ▶ or a predictable and preventable event

A tragic emergency health care intervention outcome



It does happen....

Rollover Crash Kills Medical Technician
Continental Home Care and Health Care Services Inc. Employees and Patients

A devastating tragedy...

- ▶ An ETT down the wrong hole may kill your patient and be a terrible burden for the pts family and for the medic involved
- ▶ BUT an EMS crash can kill all involved AND wipe out an EMS systems response capacity.....

Ambulance Transport Safety

- ▶ Emergency care, public health, public safety, and patient transportation.
- ▶ Important Principle: Ambulance transport safety is part of a system, the overall balance of risk involves the safety of all occupants and the public
- ▶ All get home safely

In a nutshell

- ▶ Am here to try to save you Lives
Time and Money

October 2008 JEMS Article "Rig Safety – 911"



Rig Safety 9-1-1
What you need to know about ambulance safety & standards

Safety oversight of what and by whom

- ▶ Vehicle Safety
- ▶ Vehicle Design
- ▶ Transportation systems safety
- ▶ Safety Equipment Design
- ▶ Vehicle and Safety Equipment Testing and Standard development
- ▶ Safety policies

There are more safety standards for moving cattle than for moving patients in the USA




the EMS transport process

- ▶ communications/dispatch
- ▶ the patient
- ▶ restraining device/seat
- ▶ transporting device/gurney
- ▶ paramedics/transport nurses, doctors & family
- ▶ patient monitoring equipment
- ▶ clinical care & interventions
- ▶ protective equipment
- ▶ the vehicle
- ▶ the driver/driving skill
- ▶ other road users
- ▶ the road

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The Emergency Department (ED)



An ambulance is not an ED /ICU on wheels



Is there an acceptable rate of morbidity and mortality for pre-hospital transport systems??

USA EMS data

In the USA*

- ▶ ~ 50,000 vehicles
- ▶ ~ 5,000 crashes a year
- ▶ ~ One fatality each week
 - ~ 2/3 pedestrians or occupants of other car
 - Approximately 4 child fatalities per year
- ▶ ~10 serious injuries each day
- ▶ Cost estimates > \$500 million annually
- ▶ USA crash fatality rate/capita 35x higher than in Australia

*NARS/BTS 2005-6

Is it your service's tragic year?

- ▶ ~ 50 fatalities a year
- ▶ 15,000 EMS services
- ▶ Each year one in 300 services experiences a fatality

Creating a Safety Culture

within a company must start with upper management's commitment to safety

- ▶ Awareness
- ▶ Training
- ▶ Incentive

Safety - Why now?

- ▶ Operating optimally in a transportation environment that is largely devoid of specific safety standards for the hazards and risks present
- ▶ Bridge the gap between what technical information exists and what is accessible and applied to EMS

January 10, 2008



June 17th 2008 a paramedic and a patient killed


EMS CRASH KILLS PATIENT AND A SUSSEX COUNTY (DE) PARAMEDIC IN THE LINE OF DUTY Tuesday, June 17, 2008

It is regret to advise you that a female Sussex County (DE) Paramedic was killed in the Line of Duty as was a patient killed in a horrific crash involving an ambulance in Sussex County (DE) this morning.

The single vehicle crash happened around 12:45 hours on the John J. Williams Highway near the Levens Suburb (a joint fire company station in Angles).

The Mid-Sussex Rescue Squad ambulance was transporting to Dorset Medical Center with a patient. 2 MSRS Squad members and the Sussex County Paramedic were on board when it struck a tree, which opened the side of the ambulance as seen on our home page. Tragically, the patient was killed as was the Sussex County EMS Paramedic, who was killed in the Line of Duty.

Sussex County EMS also suffered a close call last year when a Paramedic John Schram was seriously injured in a crash when a crane struck the Millard Fire Company ambulance he was riding in, while returning from a run. Additional details on this tragedy crash will follow.



In this vehicle...



October 31, 2009, Kentucky



Florida - January 12, 2009

Two ambulances responding to calls on Monday night were involved in a crash in Orange County.

Investigation with the Florida Highway Patrol said both crews had their lights and sirens on as they went through the intersection of Appleton Boulevard and State Road 408.

The ambulances struck the other and hit another car waiting at a red light.

A paramedic and the patient were transported to a hospital and could be released.

The driver and his daughter in the other vehicle also went to hospital for treatment.



February 11, 2009 – North Carolina

EMS Driver Charged After Ambulance Crash - North Carolina

A Rockingham County ambulance did off the road and flipped over Wednesday afternoon.

The crew was transporting a patient to a nursing home when the ambulance went off the road. The County Emergency Services Director Steve Hoke says the weather may have played a role in the crash. He said it drizzled, when the driver got into the curve it rained on him just as you know the was just an over-correction trying to take the bend and everything else was going, says Transportation Director.



EMS Safety

- ▶ 'patient safety'
- AND also
- ▶ 'provider' and 'public safety'

Very Important Principle

Ambulance transport safety is part of a SYSTEM, the overall balance of risk involves the safety of all occupants and the public

Thursday July 5th 2007..... Paramedic Allan Parson's killed

NEWS CENTER

Paramedic Killed in Turner Ambulance Crash

Turner, N.C. (WNCN) - A paramedic was killed and a patient was injured in a crash involving an ambulance in Turner, N.C. on Thursday.


The Washington County Sheriff's Department says the ambulance was involved in a single-vehicle crash on Wednesday night.

The ambulance driver, 39-year-old Andrew Christopher Turner, was killed in the crash. Turner was Christopher Turner of Turner, N.C. who was driving the ambulance to a patient's home.

The patient who died has been identified as Allan Parson, 61, of Turner, N.C.

A section of Route 1 was closed briefly for about the hour.

Some patients by stopped to help the paramedic. Sheriff's Department says that it could not locate the ambulance driver's license. The driver's license was found in the ambulance. The driver's license was found in the ambulance.



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

Posted By **msm** on July 5, 2007 4:08 PM (Suggest Removal)

To all the people worried about how fast the emergency services would be fast enough if it was your loved one in there.....

| Add your comments

Posted By **msm** on July 5, 2007 4:06 PM (Suggest Removal)

In fact, it would have been faster if they ran over my family member on their way to another family member....

| Add your comments

Posted By **msm** on July 5, 2007 4:08 PM (Suggest Removal)

In X-Files rules: Why isn't it assumed that the FBI Agent would find out how to know if the actions and situation surrounding this were worth this sort of loss. And I'd like to know what can be done so that this never happens again.

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

Five 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. Troopers say the ambulance was broadsided by a semitrailer in Crane Township, about 85 miles southwest of Toledo.


The ambulance, with four Antwerp Emergency Medical Services workers aboard, was taking two victims from an earlier car crash to a hospital. Troopers say it was broadsided by a tractor-trailer at the intersection of County Road 176 and County Road 87. The ambulance then burst into flames.

The Highway Patrol says three EMS workers were killed. They were identified as 44-year-old Sunny Smith, 31-year-old Heidi McDougall and 25-year-old Kelly Eager. The two patients were also killed. They were identified as one-year-old Robert Wally, 60-year-old Amanda Wells of Heidelberg.

Another emergency medical technician, Matt McDougall, and the truck driver, Gerald Chapman, 31, of Indiana, were both taken to the hospital. It's not yet clear whether they suffered any injuries.

Authorities have not said who had the right of way at the fatal intersection nor how they said if the ambulance's emergency siren and lights were turned on.

Antwerp fire chief says, "They were doing what they loved..."



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 Con Shuehik of the Payne Fire Department.

"Everyone is a brotherhood," said Friend. "Everybody looks after everybody."

Randy Shaffer, director of Paulding 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 read about it in our newsletter. We just don't think it's going to happen to us."**

Shaffer said when a call came in that an ambulance was involved in an accident Friday, "I think every squad in the county activated."

Fatalities and funerals



Funeral and burial services for Hanson were held in Marble Falls, Pa. It was an emotional day for Hanson's family and his fellow emergency workers, but also tinged with laughter, memories and smiling remembrance.

Hanson's life was suddenly cut short earlier this week, leaving his family, friends and colleagues grieving that he's gone.


At Hanson, an endless number of memories to be shared and lives that require a reflection on the short life lived as an emergency responder.

As a South Marble funeral home, an on-call crew said goodbye.

They come to reflect and remember the short life of this person, who gave us all a reason of being. It promises to be a story that will last for decades and beyond the end of the world.

An interhospital transport ? "Do no harm...."?

Content shared Tuesday, January 22, 7:51 PM

810408P | [View this article](#) | [Share this article to a friend](#) | 

Pa. ambulance involved in crash; patient pronounced dead at scene

By: [Tina Smith-Evans](#)
 E-mail: [Tina Smith-Evans](#)
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A Adams County ambulance had five patients in their hospital bed when it was involved in a head-on collision with a semi-trailer on a two-lane road in Adams County, Pa. on Tuesday, January 22, 2007. The ambulance was pronounced dead at the scene.

Adams County Emergency Services said the patient, a woman, was being transported from Gettysburg Hospital because she was suffering a "significant" heart condition.

The state is still trying to determine whether a heart issue cardiac arrest and if it prior to the crash, or whether she suffered a fatal heart attack because of an error after the crash. Stability said she suffered no significant traumatic or mechanical injuries.

▶ This IS a Transportation and Automotive Safety issue

Benefit of Safety

▶ Any cost of addressing these issues is dwarfed in contrast to the huge burden of not doing so - in financial costs let alone the personal, societal, ethical and litigation costs

Some odd facts

- ▶ Ambulances are generally not built by the automotive industry
- ▶ Intelligent Transportation Systems (ITS), transportation safety engineering is not generally integrated into EMS systems
- ▶ Although all EMS systems have medical direction and oversight, it is rare for there to be transportation expertise oversight

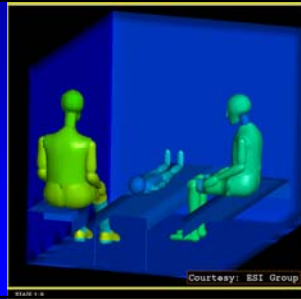
Some recent adverse outcomes



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

Testing the real world



So

- ▶ What's important
- ▶ What's not important

- ▶ What's going to save your life
- ▶ What might take your life

- ▶ What's going to hurt you
- ▶ What's going to protect you

- ▶ What is factual
- ▶ What is garbage

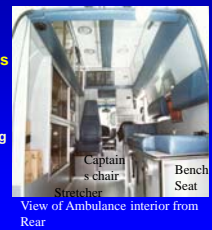
- ▶ What is new
- ▶ What is not new

Unique workplace

- ▶ In vehicles
- ▶ At roadside and other emergency scenes

The 'workplace' IS a vehicle

- ▶ EMT's often in vulnerable positions during transport.
 - Bench seat
 - Captains chair
 - Standing or kneeling



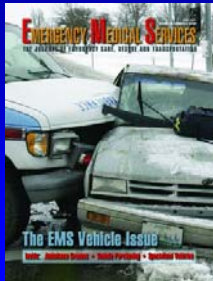
The 'workplace' is also a crash scene



Absence of standards and oversight

- ▶ Challenges in identifying best practice
- ▶ Myriad of unregulated commercial products
- ▶ No safety performance standards
- ▶ Absent national safety oversight

- ▶ What we need to consider, where is the 'bang for buck' in ambulance transport safety:



USA EMS in 1917



USA 1960's



1960 to 2009



A passenger vehicle - sure



A 'laundry or mail truck' - ?



A passenger vehicle - yes!

- ▶ "Ambulance transport has a death toll...."

Carl Craigle EMT-P, Chief Platte Valley Ambulance

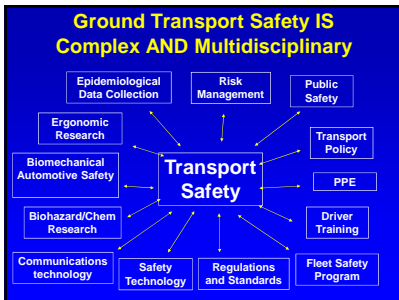
'Real world' head-on post crash





So for EMS personnel...

- ▶ What's going to kill you?
- ▶ What's going to injure you?



Occupational Health and Safety.....?

- ▶ This IS a Transportation and Automotive Safety issue
- ▶ This is a Systems safety issue



Goals

- ▶ Standards for safety
- ▶ Policy based on Science
- ▶ Databases to demonstrate outcome

EMS Best Practice, Sept 2006

Patients must be in the over the shoulder harness, medics restrained in seat belts, equipment secured



What are the solutions?

- ▶ Training?
- ▶ Practice Policy?
- ▶ Transportation Systems Engineering?
- ▶ Automotive Engineering?
- ▶ Education of other road users???

Hmm...



So why is it...

- ▶ That the EMS providers -
 - Were wearing navy blue – one of the most difficult colors to see at night
 - Had no head protection, when all other emergency personnel at the scene did
 - Had no protective clothing, when other emergency personnel at the scene did???

It isn't like this outside of the USA



USA Ambulances: FMVSS Exemption

DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration

49 CFR Parts 571, 572, and 589
[Docket No. 92-28, Notice 7]
[RIN No. 2127-AB85]

Federal Motor Vehicle Safety Standards;
Occupant Protection

§ 571.572-1 Vehicles manufactured on or after September 1, 1999 (except September 1, 2002). Except as provided in § 571.572-1.1, § 571.572-1.2, § 571.572-1.3, or § 571.572-1.4, shall, when used under the conditions of § 571.572-1.5, comply with the requirements specified in § 571.572-1.6 of the Federal Motor Vehicle Safety Standards that apply to the area only, the provisions of § 571.572-1.7. The phrase "include the manufacturer chooses to use during this period shall apply to the National Highway Traffic Safety Administration pursuant to 49 CFR 571.572-1.8.

SUMMARY: On August 16, 1995, NHTSA published a final rule amending Standard No. 201, "Occupant Protection in Motor Vehicle" to require passenger side air bags, child and infant seats, and inflatable passenger side air bags, which are required to be installed in all 1999 model and later vehicles. In response to petitions for rulemaking filed by the manufacturers of § 571.572-1.1, NHTSA is amending § 571.572-1.1, with no modification to or after September 1, 2002, and, where appropriate, the conditions of § 571.572-1.5, to exempt as provided in § 571.572-1.1, vehicles manufactured on or after September 1, 2002, that, when used under the conditions of § 571.572-1.5, comply with the requirements specified in § 571.572-1.6 of the Federal Motor Vehicle Safety Standards that apply to the area only, the provisions of § 571.572-1.7. The requirements do not apply to any target that cannot be so used using the provisions of § 571.572-1.8.

§ 571.572-1.1 A vehicle is exempt from the requirements of § 571.572-1.1 if:

(a) Any target is a child restraint or a convertible roll-over protection mechanism;

(b) Any target is a child restraint or a convertible roll-over protection mechanism;

(c) Any target is a child restraint or a convertible roll-over protection mechanism;

(d) Any target is a child restraint or a convertible roll-over protection mechanism;

(e) Any target is a child restraint or a convertible roll-over protection mechanism;

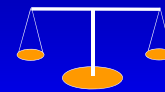
FMVSS exempt.....



NFPA Ambulance Standard Development

- ▶ NFPA Ambulance Standard Development underway
- ▶ Scope for integrating appropriate technical expertise
- ▶ Key to encourage collaboration with automotive safety technical experts
- ▶ Essential that the standards are realistic for general ambulance services

Balance of concerns and risk during transport



- ▶ Response and transport time
- ▶ Clinical care provision
- ▶ Occupant safety/protection
- ▶ Public Safety

Benefit of Safety

- ▶ Safe practices save lives, time and money

Safety Management

- ▶ A Safety Culture
- ▶ Protective Policies
- ▶ Protective Devices
 - To prevent a crash
 - In the event of a crash
- ▶ Continuous Education and Evaluation

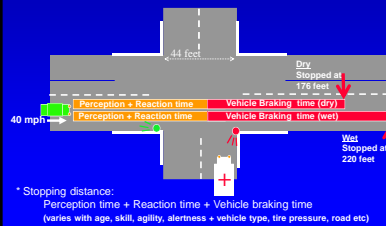
And very Predictable...

- ▶ Intersections are lethal environments

So.. The real world for an EMS vehicle approaching a red light

- ▶ You think they heard you...
- ▶ You know they must have seen you..
- ▶ And maybe they did
- ▶ But..
- ▶ There is NO way humanly possible that they could stop.....

The real world Intersection passenger car stopping distance* at 40 mph dry and wet



The Crash Event - Crash Testing

- ▶ An introduction
- ▶ What one needs to know
- ▶ What do the tests really mean
- ▶ And, what tests are meaningful

Intrusion vs Deceleration

- ▶ Intrusion
= vehicle to vehicle or vehicle to fixed narrow object
- ▶ Deceleration
= sudden stop – ie. sled test

Intrusion



Deceleration



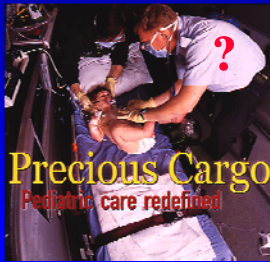
Dynamic Safety Testing

- ▶ requires sophisticated, expensive equipment
- ▶ measurably demonstrates forces generated during collision
- ▶ accepted international standard for vehicle restraint systems

If we know this – and its published....



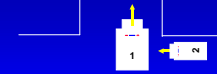
Why do we do this?



Foldable



What is actually happening during an ambulance crash

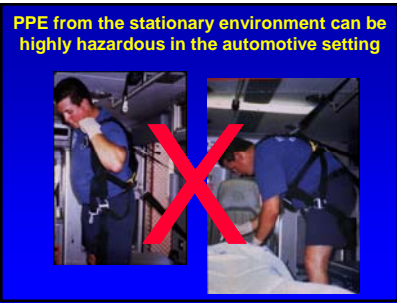


- 1 - Target vehicle, Type I ambulance
 - 2 - Host vehicle, Type II ambulance
- Closing speed 44 mph





A few key words about restraint systems...



Being seated IN an automotive seat is what will protect you

- ▶ Anything that allows or encourages you to get up out of your seat will also encourage you to be injured or killed – it is potentially lethal to be out of your seat in any fashion
- ▶ 4 or 5 point harnesses for sidefacing occupants are potentially lethal – and is in **NO WAY SUPPORTED BY ANY DATA OR AUTOMOTIVE SAFETY EXPERTISE**

Increasing awareness ...

EMS CLOSE CALLS
THINK ZONE
Firefighter Close Calls

What do we know now??

- ▶ Intersection crashes are the most lethal
- ▶ There are documented hazards, some which can be avoided
- ▶ Occupant and equipment restraint with standard belts is effective. (Over the shoulder harnesses for patients should be used, with the gurney in the upright position where medically feasible)
- ▶ Some vehicle design features are beneficial - automotive grade padding in head strike areas, seats that can slide toward the patient
- ▶ Electronic Driver monitoring/feedback systems appear to be highly effective
- ▶ Head protection??

Rash of "Safety Concept" vehicles.... Devoid of substantive automotive safety engineering input or testing



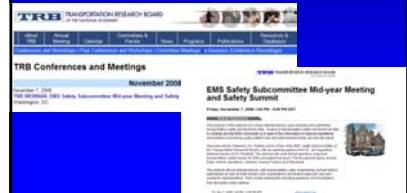
Yes, the ride of your life....

- ▶ Sure... these vehicles all parade around the EMS and Fire shows BUT...
- ▶ NOT ONE of these vehicles has been to the automotive safety shows or scrutinized by the automotive safety industry

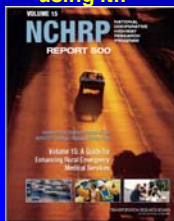
Innovation



National Academies TRB EMS/Medical Transport Safety Inaugural Summit – November 7, 2008 next is to be October 29th, 2009



Transportation Research Board is an excellent resource... we should be using it!!



Safety concepts out there now

- ▶ Driver feedback technologies
- ▶ Tiered dispatch
- ▶ Enhanced ambulance vehicle design
- ▶ Intelligent Transport Technologies - ITS
- ▶ New Safety Standards

Important...

- ▶ Ergonomics and automotive safety issues are interrelated
- ▶ Crashworthiness priorities override the ergonomic issues

What about changing driver behavior in the real world??

AN OPTIMAL SOLUTION FOR ENHANCING AMBULANCE SAFETY: IMPLEMENTING A DRIVER PERFORMANCE FEEDBACK AND MONITORING DEVICE IN GROUND EMERGENCY MEDICAL SERVICE VEHICLES.

Nadine R. Levick, MD, MPH
Maimonides Medical Center

REAL WORLD APPLICATION OF AN AFTERMARKET DRIVER HUMAN FACTORS REAL TIME AUDITORY MONITORING AND FEEDBACK DEVICE: AN EMERGENCY SERVICE PERSPECTIVE.

Nadine Levick
Objective Safety LLC
United States of America
Loren Wieruck
Michael E. Nagel
California Ambulance
United States of America
Paper Number 050234

Purpose of 'Feedback box' Program

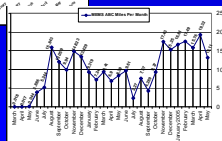
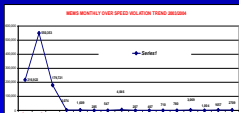
- ▶ Enhance Safety
- ▶ Improve Driver Performance
- ▶ Save Maintenance Dollars
- ▶ Aid Accident / Incident Investigation

How the Device Works

- ▶ Computerized monitoring device installed on each vehicle to measure parameters
- ▶ Each driver has individual key "fob"
- ▶ Data collected every second
 - including: vehicle speed and performance, driver behaviors and emergency mode
- ▶ Auditory feedback of warning 'growls', and penalty tones
- ▶ Data downloaded automatically every day



Demonstrated Effectiveness



- I – blind data, no growls
- II – growls & tones ON unidentified data capture
- III – identified data

A key to safe ambulance transport



Extensive Indirect cost savings

- ▶ Fewer out of service vehicles
- ▶ Improved transport times
- ▶ Decreased administrative lost in managing unsafe behaviors
- ▶ Decreased legal burden
- ▶ Automatic system wide data
- ▶ Insurance benefits

Other monitoring devices

- ▶ Primarily to record events during and immediately preceding a crash
- ▶ Give no driver crash prevention feedback
- ▶ Administratively burdensome
- ▶ Intrusive
- ▶ Not demonstrated to be as effective in improving vehicle maintenance costs or as effective in modifying driver behavior long term

You want a system that works!!

- ▶ Does the system really work
- ▶ Is it going to be a major burden on your staff to implement
- ▶ What are the real costs
- ▶ Are you going to have video of your company vehicle on you tube??

The jury is out on

- ▶ Opticon
- ▶ Simulators

American National Standard ANSI/ASSE Z15.1-2006 Safe Practices for Fleet Motor Vehicle Operations

- ### What Z15 encompasses
- ▶ Safety Program
 - ▶ Safety Policy
 - ▶ Responsibilities and Accountabilities
 - ▶ Driver Recruitment, Selection and Assessment
 - ▶ Organizational Safety Rules
 - ▶ Orientation and Training
 - ▶ Reporting Rates and Major Incidents to Executives
 - ▶ Oversight



News we don't want to see

Jan 22, 2007 6:39 am US/Eastern

Caught On Video: EMT Struck By Car

Ian Young Reporting

CHICAGO The car hit 46-year-old Capt. Steven Quindongo so violently it smashed the vehicle's windshield and sent him flying through the air.

Quindongo, a 17-year veteran of the city's emergency medical services, was on the scene of a fire on Riverside Avenue in the Bronx Sunday afternoon when a civilian car moved past police barricades and caught him from behind. Chief Wayne McFarland was on the scene as the damaged health food store where his men had successfully put out the flames.

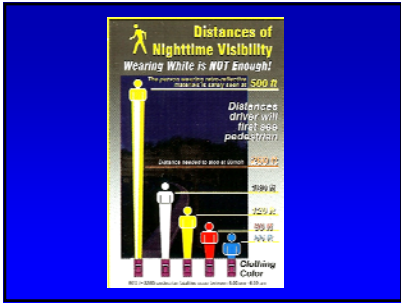
"We had two firefighter minor injuries," he told us, "and they were taking care of our men and when he (Quindongo) was walking back to the ambulance he was struck by the civilian vehicle."

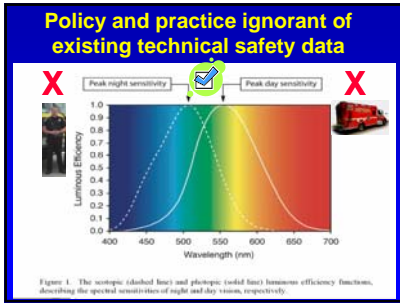
Worker visibility Act: November 24th 2008

PART 634—WORKER VISIBILITY

634.2 Rule. All workers within the right-of-way of a Federal-aid highway who are engaged either in traffic control or other work for purposes of work in construction equipment within the work area shall wear high-visibility safety apparel.

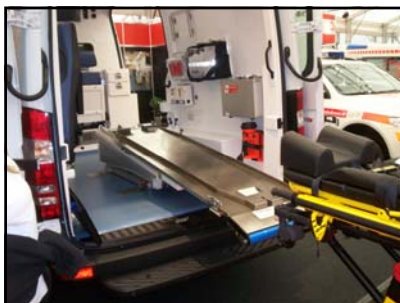
Workers means people on foot who do their jobs within the right-of-way of Federal-aid highways, such as highway construction and maintenance crews, survey crews, utility crews, and other workers in the work area.





International approaches

- ▶ The state of the art non-USA vehicles have NO squad bench nor the after market structural vehicle modifications that can potentially decrease crashworthiness integrity that were seen in study vehicles.



Vehicle Occupant Safety design

European design
Safety technology
is a key focus



Safe and Ergonomic design



Ergonomic layout and equipment



NSW Australian vehicles



Flexibility to manage two patients



JOURNAL

IRHA selected to test new ambulance

New design smaller, more cost efficient, say health officials

Sanjiv Health is looking to act on its original plan to implementing a pilot project, giving the town's a year to further the Sprinter design to see if it could be a replacement to the current Fleet Mac ambulance design.

According to Christenson, the Sprinter design looks similar to delivery vans, and boasts a whole new set of safety and technology features such as GPS.

It's a lot smaller, so that makes it a lot easier for paramedics to be strapped in but still be able to reach all the equipment needed to tend to a patient," said Christenson.

Christenson also explained that the new ambulances require less maintenance, and have an overall smoother quieter ride. They also are lower to the ground and come equipped with new 'no-lift' stretchers, that eliminate 85 per cent of strenuous lifting paramedics do to get patients in and out of the vehicle.

High speed crash, rolled and the occupants (patient and medics) had only minor scratches



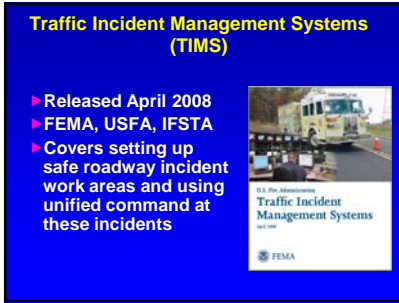
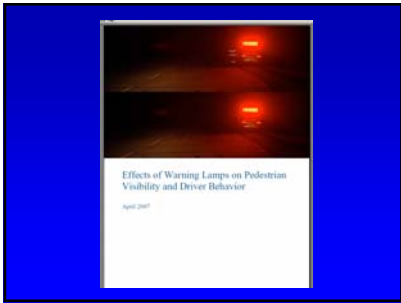
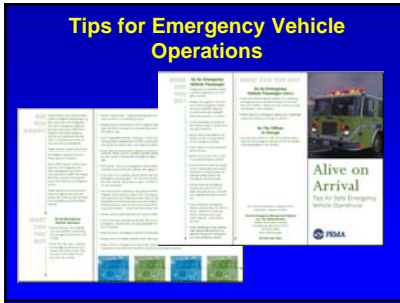
So....

- ▶ Which vehicle do you want to be in ?
- ▶ Which vehicle is the best for efficient, and effective patient care?
- ▶ Which vehicle provides optimal risk management ?
- ▶ What is the optimal fleet mix?



“Ripoff and Duplicate”

- ▶ Avoid reinventing the wheel at all costs
- ▶ Where are the best practices that we need to transfer knowledge from



Risk/Hazards

- ▶ Predictable risks
- ▶ Predictable fatal injuries
- ▶ Serious occupational hazard
- ▶ Public safety hazards

What you can do now

- ▶ Have a written and implemented 'safety program'
- ▶ Secure all equipment
- ▶ Secure occupants with standard belts
- ▶ Don't drive through red lights/stop signs
- ▶ Use properly implemented "Feedback Boxes"

What do we know works...

- ▶ Vehicle Operations Safety Policies
- ▶ Squad bench lap seat belts
- ▶ Patient over the shoulder belts
- ▶ Securing equipment
- ▶ Forward and rear facing seating
- ▶ Some electronic technical devices
- ▶ Safety awareness
- ▶ Cultural change

Important Principles !

1. A culture of safety
 2. Drive cautiously
 3. Wear your belts & restrain all occupants
 4. Secure all equipment
 5. Integrate scientific data into your policies and procedures
- Unrestrained occupants and equipment are a potential injury risk to all occupants

Very Important Principle

Ambulance transport safety is part of a **SYSTEM**, the overall balance of risk involves the safety of all occupants and the public

small changes can make a BIG DIFFERENCE

- ▶ **PREPARE – TEACH – REACH – RESPOND**
 - ♦ **Look** at your own safety record
 - ♦ **Teach** safety and hazard awareness
 - ♦ **Reach** out with safety information to all your EMS providers
 - ♦ **Respond** with the best safety practices

**PREDICTABLE
PREVENTABLE
and
NO ACCIDENT**

Conclusion

- ▶ EMS transport has serious hazards and safety issues
- ▶ Major advances in EMS safety research, infrastructure and practice over the past 5 years
- ▶ New technologies for vehicle design, occupant PPE and equipment restraint and driver performance are now available
- ▶ Development of substantive EMS safety standards is a necessity and a reality
- ▶ Failure to transfer knowledge from transportation and automotive safety is unacceptable and dangerous
- ▶ EMS is still way behind the state of the art in vehicle safety and occupant protection

And....

- ▶ It is no longer acceptable for EMS to be functioning outside of automotive safety and PPE safety standards for prevention of and protection of EMS providers and the public from injury and death

Thank you! Any Questions??

Electronic handout available online
<http://www.objectivesafety.net>

