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?
What can we learn from international colleagues?

Who am I?
Nadine Levick MD, MPH
Emergency Medicine Physician and Public Health Academic, (USA-Hopkins, Harlem, Maimonides, Brooklyn & Australia – Royal Melbourne, Royal Childrens Hospitals, Royal Australian Flying Doctor Service)
Chair, National Academies Subcommittee TRB EMS Transport Safety, USA
Founder of EMS Safety Foundation
Recipient, International Society of Automotive Engineers, Women’s Leadership Award for EMS Safety

Outline
I. Identification of ground EMS transport safety issues, hazards and areas of risk to patients, providers and public
II. Highlight unacceptable mythology and challenges to advancing EMS transport safety
III. Profile innovation, new safety technologies and strategies and knowledge transfer to enhance safety and reduce risks of ground EMS and patient transport

Things can go wrong – but when there are sound safety policies and technologies in place, and the system is well prepared, you can minimize harm

Your Interactive Handout awaits you online at...
www.objectivesafety.net
This WILL be FAST!!
No need to take any notes – all text slides will be awaiting you in your online Handout

Objective Safety

Educating & Imparting Awareness
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Your electronic handout

If you are < 30 years old...
February 4, 2012

Several injured in Pike County ambulance crash - Kentucky

February 7, 2012

Tragedy you don’t want to be involved in

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

Safety of the…
- Provider
- Public
- Patient

Some questions for you all:
- Have you ever been in a EMS crash?
- How many times?
  - 1
  - 2
  - More?
- Have you ever been hurt in an EMS crash?
- Do you know any one who has ever been hurt in an EMS crash?
- Do you know of anyone who has been killed in an EMS crash?

http://www.objectivesafety.net

Your Handout and Additional Resources

Provider and Pt die, Jan 13, 2012

January 31, 2012

Woman dies in ambulance crash

A 71-year-old woman was killed Tuesday and transported to the hospital after an ambulance crash in South Carolina, according to reports.

The woman, Shreve Bledsoe Cary of 95-year-old, was killed while as a passenger in the front of a Lee County, Mo. Ambulance. Her husband was the patient in the back with a paramedic, according to the news report.

The ambulance went off the road and rolled over after being struck by a vehicle on the southbound side of Highway 17 near a comics. It happened around 11 a.m. Tuesday on Old Sheldon Church Road in Sheldon, N.C.

Have you ever been in an EMS crash?
- How many times?
  - 1
  - 2
  - More?
- Have you ever been hurt in an EMS crash?
- Do you know anyone who has ever been hurt in an EMS crash?
- Do you know anyone who has been killed in an EMS crash?
"...I'd like to know what can be done so 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 06:20 AM EDT

Five people were killed in a head-on crash involving an ambulance and semi-truck on U.S. 29 near Elgin, South Carolina.

The crash occurred around 6 a.m. when the ambulance and semi-truck collided head-on on U.S. 29 near Elgin, South Carolina. The ambulance was transporting a patient to the hospital when the crash occurred.

Police said the ambulance was heading north on U.S. 29 when it collided with the semi-truck, which was heading south.

Both the driver and the patient in the ambulance were killed in the crash.

Emergency personnel are on the scene of the crash and are working to determine the cause of the accident.

The crash occurred near the intersection of U.S. 29 and Old Silver Run Road in Elgin, South Carolina.

South Carolina Highway Patrol has set up traffic control at the scene and the road has been closed in both directions.

The crash is currently under investigation.

South Carolina Highway Patrol

January 8, 2011

Patient dies after ambulance, car collide

Jan 8, 2011

A patient has died after an ambulance and a car collided in North Carolina.

The accident occurred on Jan. 8, 2011, on North Carolina Highway 141. The patient, who was being transported from a hospital to another hospital, died at the scene.

The ambulance was carrying a critically injured patient when it collided with a car.

Emergency personnel responded to the scene and the patient was pronounced dead at the scene.

The driver of the car was airlifted to a hospital with minor injuries.

The cause of the accident is under investigation.

January 13, 2011

Ambulance captures seconds away from hospital

Jan 13, 2011

An ambulance was captured on camera just seconds away from a hospital.

The ambulance, which was transporting a critically ill patient, was caught on video as it raced towards the hospital.

The patient, who was suffering from severe dehydration, was rushed to the hospital immediately.

The driver of the ambulance said he was just seconds away from the hospital when the video was captured.

The patient was treated and released after receiving medical attention.

February 16, 2011

Emergency Medical Services (EMS)

An important and unique transport system

- Public safety, public health and emergency service
- Is there to save lives

April 18, 2011

Ambulance driver injured in ambulance crash - North Carolina

An ambulance driver was injured in a crash involving an ambulance and a car.

The accident occurred on April 18, 2011, on U.S. 1 in South Carolina. The ambulance driver was transported to a hospital with minor injuries.

The ambulance was carrying a patient when it collided with a car.

Emergency personnel responded to the scene and the driver was treated for minor injuries.

The accident is under investigation.

June 3, 2011

Crash involving Ambulance - South Traffic on Highway 141 in Sumter County, SC

June 3, 2011

An ambulance and a car collided on Highway 141 in Sumter County, South Carolina.

The accident occurred around 3 p.m. on June 3, 2011, on Highway 141. The ambulance was transporting a patient to the hospital when it collided with a car.

Both the ambulance and the car were severely damaged in the crash.

The patient in the ambulance was transported to a hospital with minor injuries.

Emergency personnel responded to the scene and the accident is under investigation.

January 31, 2011

EMS safety

- Emergency Medical Services (EMS)
- An important and unique transport system
- Public safety, public health and emergency service
- Is there to save lives
Firstly!

- An accident?
- or
- a predictable and preventable event

A tragic emergency health care intervention outcome

A devastating tragedy...

- An ETT down the wrong hole may kill your patient and be a terrible burden for the patient's family and for the medic involved

Negative impact on system performance...

- BUT an EMS crash can kill all those involved AND wipe out a rural EMS system AND negatively impact a region's 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

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 safe?
- 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?

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

In the USA there are more safety standards for moving cattle than for moving patients

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:

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

Creating a Safety Culture
within a company must have leadership and support of upper management
- Awareness
- Training
- Incentive

Key elements to transport safety policies
- Vehicle/Fleet Safety
- Occupant protection
- Driver performance monitoring and feedback
- Hours of service
- Driver/provider wellness and fitness
- Public safety

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

The Emergency Department (ED)

An ambulance is not an ED / ICU on wheels
Ground Ambulance Transport Safety IS Complex AND Multidisciplinary

Do we ask vehicle builders to write cardiac arrest protocols…? Vehicle design and safety is not what we are trained to do!!!

Would we....? Seeing that we are health care providers -- let's look at it this way --

- Would we use medical equipment that was built by folks who were not technically qualified or trained biomedical engineers and who just said -- “this device is safe”?
- Or would we expect them to be qualified in this field and that their products were tested in a meaningful way to ensure that they were safe?

And...

- In the vehicle
- At the scene
- During transport

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

Ontario EMS Occupant Safety 30 August 2010

EMS Transport Safety

- 'patient safety'
- AND also
- 'provider' and 'public safety'
### Balance of concerns and risk during transport
- Response and transport time
- Clinical care provision
- Occasional safety/protection
- Public Safety

### Some odd USA 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

### Ambulance transport a serious transport safety problem...
- The most lethal vehicle on the road both per mile travelled and per vehicle
- Is exempt from federal commercial fleet safety oversight (FMCSA)
- 2/3 fatalities not in the ambulance
- Exempt from most FMVSS standards

### Data...
- What is your transport safety record in your service?
- How can you improve if you don’t have a meaningful measure of safety performance?
- Transport safety is not guesswork, it is a science

### ESC – Does your ambulance have it??
- ESC helps drivers stay in control when they need to swerve or brake suddenly to avoid an obstacle or turn corners on slippery roads.
- Vehicles equipped with ESC are involved in fewer severe collisions caused by loss of control, resulting in significantly fewer deaths and injuries

### 1980’s Then….

### And NOW!….

### NAEMSP 2012

### Safety and Operational Innovation: Integrating Global Best Practice and Interdisciplinary Technical Expertise into Ambulance Design


### So
- What’s important
- What’s not important
An interhospital transport?

"Do no harm...?"

Ty, ambulances involved in crash, patient pronounced dead during transport

- P < 0.001

*P < 0.001

Probability of fatal crash is increased 2.7 fold if the patient is not restrained

- OR 2.7 vs restrained

**P < 0.001

Despite ad interim data not supporting this finding, these data reflect the national experience of a 2.5 fold increase in fatality risk for non-restrained patients

***P > 0.001

82% of fatally injured EMS rear occupants unrestrained

> 74% of EMT occupational fatalities are MVC related

Serious head injury in >65% of fatal occupant injuries

More likely to crash at an intersection with traffic lights (37% vs 18%, p<0.001)

Consequences can be predictable & likely preventable

Costs of these adverse events are high in loss of life, financial burden and negative impact on delivery of EMS care

Other high speed vehicles (e.g., racing cars) have a different safety paradigm

Design of interventions to mitigate injury is predicated on a valid testing model

Complex both engineering and public health issues
### USA EMS transport safety data estimates
- ~ 80,000 vehicles
- ~ 9,000 crashes a year
- One fatality each week
  - ~ 23 pedestrians or occupants of other car
  - ~10 serious injuries each day
- Cost estimates > $500 million annually

### Is it your service’s tragic year?
- ~ 50 fatalities a year
- 15,000 EMS services
- Each year one in 300 services experiences a fatality

### Occupational transportation fatalities...
- WE HAVE A BIG PROBLEM HERE

### and what is killing EMS?
**EMS personnel fatalities***
- 74% transportation related
  - 1/5 of ground transport fatalities were struck by moving vehicles
- 11% were cardiovascular
- 9% were homicide
- 4% needle sticks, electrocution, drowning and other

### So does it make sense?
- Gloves and universal precautions?...
  - … good biohazard protection BUT aren’t going to give much protection in a ambulance crash

### And...
- This is in a setting where
- transport safety is the major and most costly adverse event in EMS
- And there have been all sorts of major technical and informational developments since Jan 2006

### A challenge we know now...
- …is that there is a major problem with the present approach and what is being done currently
- and many practices are in conflict with, or not supported by, existing technical engineering science

### Some new dimensions
- Vehicles – smarter, sleeker, safer – CHEAPER!
- Operations – new technology tools
- Interdisciplinary infrastructure – new global platforms

### Systems safety of:
- Getting you, your patient and equipment in and out of the vehicle
- Providing patient care inside the vehicle
- Occupant protection in crash and near miss situations
**Safety Performance**
- Measurement
- Outcomes
- Technical expertise

**When is it safe to do what…?**
- What are your policies???
  - If your patient is pink, warm and talking?
  - Are you required to notify the driver if you are out of your seat belt?
  - Are ‘routine procedures’ putting you at risk?

**What is a safe speed and how do we identify that?**
- What is a survivable impact?
  - E = \frac{1}{2} mv^2
  - v^2 = 2as
  - ~12 mph (20 km/hr)

**What is a survivable impact?**
- ~30 mph - survivable

**What is a survivable impact?**
- ~60 mph – not survivable

**A survivable impact??**

**A serious problem…**

**Transport related aspects**
- dispatch of EMS/Medical transport vehicles
- transport policies and protocols
- vehicle fleets and vehicle design
- vehicle purchase standards
- Intelligent Transportation Systems (ITS) technology
- driver training
- driver performance monitoring
- roadside and road design
- integrated traffic safety technologies
- scene safety and visibility
- safety data capture
- safety oversight
Transport Medicine

- Impact Biomechanics
- Transport Ergonomics
- Fleet Safety

Impact biomechanics
- Crashworthiness
- Vehicle design
- Occupant protection

Transport Ergonomics
- Operational tasks
- Human factors analysis
- Range of reach
- Patient loading and unloading

Fleet safety
- Operational policies – dispatch, safety
- Fleet mix
- Vehicle selection – safety, ESC, loading height
- Driver performance and monitoring
- Scene safety
- Visibility and conspicuity
- Safety measurement and management

June 17th 2008
A paramedic and a patient killed

In this vehicle...

October 31, 2008 - Kentucky

April 30, 2009 - Tennessee
Have you ever driven impaired/distracted?

- Impairment
  - Illness
  - Exhaustion
  - Substance
- Emotion
- Distraction
  - CELL PHONE !!! (**A MAJOR HAZARD**)
  - Other technology

Talking increases crash risk 5x
Texting is COMPLETELY UNACCEPTABLE

April 14th, 2008

What policies and procedures do you have in place to protect your providers, service, patients and public???

August 2009 – Impaired…

October 22, 2009, TN
Patient and Provider killed, Attendant Critical
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

Safety is a tool to save
- Lives
- Time
- Money
  must be evidenced based
Golden Hour – not so hot

March 2010 Annals EM

Golden Hour Summary

This study suggests that in our current out-of-hospital and emergency care system time may be less crucial than once thought. Routine lights-and-sirens transport for trauma patients, with its inherent risks, may not be warranted. [Ann Emerg Med. 2010;55:247-248.]

April 2010, Resuscitation – Going fast can hurt your patient clinically!

CPR?

The laws of physics prevail...

and they don't care what your job title is or if you are a patient, a provider or a member of the public

Science behind Policy

"For successful technology, reality must take precedence over public relations, for Nature cannot be fooled."

Richard P. Feynman 1988

Important...

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

Goals

Standards for safety
Policy based on Science
Databases to demonstrate outcome

Policies? – is pull over to the right really safer...?
MedStar Ambulances Will No Longer "Run Hot" When Transporting Cardiac Arrest Patients (4/21/2010)

MedStar ambulances will no longer 'run hot' - when paramedics inside are giving chest compressions to patients in cardiac arrest, officials say. "This policy, which took effect Friday, will affect about 1,400 of the more than 100,000 calls to which MedStar responds annually in the 15 Tarrant County cities it serves."

NAEMT July 2006 Position statement

Policy makes a difference...

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

Safety is Good Business

Are you self insured???

Very Scary insurance data – the $10 million dollar EMT

Workers Compensation Rate increased by 27 %
A problem

2011 Insurance data –
- 35 fold more likely to have a claim based on transport than related to medical care

2007 Insurance data –
- 27 fold more likely to have a claim based on transport than related to medical care

2003 Insurance data –
- 10 fold more likely to have a claim based on transport than related to medical care

Expensive....

EMS CANNOT Afford to keep paying out like this....

And very Predictable...
- Intersections are lethal environments

Very Expensive

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

Testing the real world
And this all takes place in 60 milliseconds – the blink of an eye.

Impact residue

CTD dynamics

During impact

A few key words about restraint systems...

Deceleration Sled test (upon impact) 24 G, 30mph


PPE from the stationary environment can be highly hazardous in the automotive setting

Systems safety failure AND dangerous

Overwhelming existing evidence these practices are HIGHLY dangerous

NO evidence whatsoever that these practices are NOT dangerous, let alone safe

NOT new technical data...


Side facing 4-point harnesses demonstrated to be lethal, even at slow ground vehicle speeds
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 over both shoulders for side-facing occupants are potentially lethal – and in NO WAY SUPPORTED BY ANY DATA OR INDEPENDENT AUTOMOTIVE SAFETY EXPERTISE

What do we know now??

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

Air EMS is a role model for safety initiatives and focus

Air Safety Approach

- Safety Program Planning
- Evaluating
- Analysis of Safety Performance
- Analysis of Safety Information and Data
- Analysis of Risk Profiles and Plans

Ambulance Safety Research: A New Field

We should use the best safety practices demonstrated in engineering
...in automotive safety engineering

and in ergonomics

August 11, 2011
Online Annals:

Priorities……
Research papers in the past 30 years
- EMS Safety
  - 43 papers - on ambulance safety
  - 2 papers - on ambulance ergonomics
  - 1 paper - on stretcher ergonomics
- Computer Workstations
  - 30,000 papers – on ergonomics of computer work stations
- Erectile Dysfunction
  - 100,000 papers – on Erectile Dysfunction

2012… but these can really hurt your back too!

So what’s important..
- A stretcher system that doesn’t harm your back… and your services wallet
- The new Mondial Ferno
- A 27 inch loading height

And what is the loading height of your ambulance??
Size matters… Less than 27 inches will save your back!!!!

2012…

Range of reach.. This is a well defined technical science

‘Workplace’ Hazards

Bigger is not necessarily better……

Carl Craigle EMT-P, Chief Platte Valley Ambulance, CO

It does happen....
But what about head protection?

New EMS helmet prototypes

Which of these two vehicles would you want? Sprinter v Ford Transit crash test

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

‘Safety’ approaches being driven by manufacturers claims and sales rather than by science and data

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

October 2008 JEMS Article “Rig Safety – 911”

Ambulance Vehicle Standards??

- KKK?
- AMD?
- FMVSS?
- CMVSS?
- NFPA?
- SAE…?
- ASTM…?
- International
  - ASA
  - CEN
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

SAE Ambulance Equipment mounting testing standards
Frontal Impact SAE 2917, published May 2010
Side Impact SAE 2956, published June 2011

EMS Best Practice, Sept 2006

Hmm...

It isn’t like this in the rest of the world

Worker visibility Act: November 24th 2008

Day visibility

Night visibility
Here’s the real world at 6 ft…

August 2009 – Visibility review

Policy and practice ignorant of existing technical safety data

This addresses some very real risks, very creatively – and currently ONLY available in London Ontario!

Emergency Vehicles – Viewer Awareness

For a timely, appropriate and safe response

- Location
- Size
- Shape
- Speed
- Intended path

Summit County EMS - Colorado

- New yellow vehicle markings
- Staff use lime-green vests & jackets

- Having access to that technical knowledge supports changes to improve safety practice
But whatever color…. If you run a red light someone will be killed

Innovation

- Driver feedback technologies
- Tiered dispatch
- Enhanced ambulance vehicle design
- Intelligent Transport Technologies – ITS
- New platforms for interdisciplinary exchange
- New Safety Standards

Transport performance

- Driver training?
- Real time safety performance outcomes?

What about changing driver behavior in the real world??

Invehicle technologies to enhance transport safety

- Aftermarket in vehicle electronic e-safety devices with monitoring and feedback
Human Interface approaches

- Hardware fitted to the vehicle
- Non hardware App Driven cellular technology

The “Feedback box”

Driver behavior monitoring and feedback device

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

Demonstrated Effectiveness

Unit 302 Accident

Monitoring and feedback devices

- Implementation well received by the providers.
- 20% cost saving in vehicle maintenance within 6 months.
- No increase in response times
- Fewer crashes and less severe crashes
- Sustained improvement in safety proxies, with no inservice or retraining after the initial introduction period.

THE ACETECH™ AVI advantage

- ACETECH™ AVI – Vehicle Informatics
  - Know where your vehicles are
  - Dispatch the closest, most appropriate unit
  - Improved productivity
  - Reduced carbon emissions
  - Reduced response times
  - Reduce risk (sensor respiratory)
  - Fewer collisions
  - Reduced injuries
  - Panic / emergency button to alert to operations

ACETECH AVI

- Fleet Summary
- Journey Report
- Fuel Information
- Fleet Utilisation
- Speeding Report
- Fleet Incident Report
- Fleet Incident Report
- Fleet Response Times
- Event Notification
- Shore Line Charge Usage
- Cost on Grid
Telematicus

- "Learn"
  - All trips recorded (start trip/stop trip)
  - Established the benchmarks
- "Alarm"
  - Speed feedback activated
  - Driver Clinics
  - Automated Application update
- "Guide"
  - Messaging
  - Incident Management
  - IAS

GGD Smartphone views

- Driver's Individual performance against company set performance targets in the system
- Needle points to individual driver performance against targets
- Green area represents the difference between standard and stretch targets
- Goals can be varied by region, market, team as required
- Performance is updated and presented in real time.

Harsh Braking per 100 trips

Realtime mapping from London for 2.5hr of a trip of attempting to park in NYC after a snow storm and whilst ‘Law and Order’ filming was underway

What could you learn from the National Academies – right NOW and gratis

- The realm of burden and benefit
  - Measuring the safety of the system
  - Determining the economic, ethical and risk benefit challenges
- Transport System Management
  - Fleet safety and oversight technologies and policies
  - Operations management – depots, congestion routing, deployment of resources, benchmarking
- Vehicle safety
  - Occupant protection design and testing
  - Vehicle performance safety
  - Vehicle and personnel human factors issues
- Dissemination and Policy
  - Knowledge transfer
  - Standards, specifications and policy

Its out there NOW

- TRB 2009 Summit – addressed the key and interdisciplinary issues, in one day – please seek that information out.
- There have been two TRB Summits held, 2008, 2009 and both with vehicle engineering and transportation systems technical expertise

October 29, 2009 TRB Summit

- The realm of burden and benefit
- Determining the economic, ethical and risk benefit challenges
- Transport System Management
- Vehicle safety
- Knowledge transfer
- Standards, specifications and policy

The “kitchen design” is completely unacceptable and a failure in health care delivery, occupant protection and ergonomics.

Independent technical expertise must be here and involved.

EMS Safety Systems, Strategies and Solutions Summit – February 29th 2012 – sign up now

http://www.cvent.com/d/zcq8tt

EMS Safety Systems Strategies and Solutions Summit

To be held on site DC and online Feb 29

Auspices of the National Academies of Science, Medicine and Engineering

EMS Safety Foundation

www.EMSSafetyFoundation.org

The EMS Safety Foundation: A practical and functional model

Interdisciplinary and Operational and International

- Innovation
- Collaboration
- Knowledge transfer

R & D “Ripoff and Duplicate”

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

EMS Safety Foundation Ambulance Vehicle & Ergonomics Workshop, October 2009

Mission

- This is a team of like minded innovators across EMS Medical Transport and a number of technical disciplines, who share the common mission of enhancing the safety of EMS delivery for all involved.
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.

EMS Safety Foundation Delegation seeking out International Innovation

- EMS Responder Rettmobil 2010 Delegation
Vehicle Occupant Safety design

European design
Safety technology is a key focus

Safe and Ergonomic design

Patient Transferring Slides
Ergonomic layout and equipment

Flexibility to manage two patients

Podcasts - with Kyle Bates in ‘First Few Moments’
- Latest Podcast - Chris Fitzgerald, our EMS Safety Foundation’s Director of Human Factors and Ergonomics shares some key points on lifting and moving patients and equipment - http://firstfewmoments.com/?p=742

Guest Technical Expert
- Jonas Liden, Industrial Design, Sweden
the result of the frequency analysis, green dots mark equipment used every time the ambulance is driven, orange is used every day, red every week and so on.

Texas - Careflite's new vehicle

Careflite's new vehicle

The new Oslo Ambulance
EMS SAFETY COURSE
National Association of Emergency Medical Technicians

Course Design
- One-day program
- Interactive lecture, discussion, group activities
- Case studies using real incidents
- 8 hours continuing education credit (CECBEMS)
- Presented in 8 modules

NAEMT EMS Safety Course
For more information about the course, including how to find a class in your area or to sponsor a class
call 1-800-346-2368
(1-800-34NAEMT)
www.NAEMT.org
or email info@naemt.org

Tips for Emergency Vehicle Operations
USFA Emergency Vehicle Safety Initiative
Traffic Incident Management Systems (TIMS)
- Released April 2008
- FEMA, USFA, IFSTA
- Covers setting up safe roadway incident work areas and using unified command at these incidents
Transportation Research Board is an excellent resource... we should be using it!!

Technical Collaboration is key
- We are NOT the experts in this science
- We cannot afford to play the silo game here, it is costing lives, time and money
- We MUST have a meaningful evidenced based approach to design, operations and policy
- We must be outcomes driven

this vehicle is safety crash tested by automotive experts

Unlike this vehicle

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?

Fleet Mix?

Were we safer in the Cadillac???

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

Risk/Hazards
- Predictable risks
- Predictable fatal injuries
- Serious occupational hazard
- Public safety hazards
Goals

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

Safety Management

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

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

Future

- Meaningful Goals
- New policies
- New practices
- New standards
- New vehicles
- New technologies

Conclusion

- EMS transport has serious hazards and safety issues
- Major advances in EMS safety research, infrastructure and practice over the past 5 years
- Development of substantive EMS safety standards is a necessity and a reality
- Multidisciplinary safety issue that EMS cannot solve internally
- 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, transportation and occupational safety

And….

- It is no longer acceptable for EMS to be functioning outside of transportation, automotive 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 and resources available online
http://www.objectivesafety.net