WELCOME!

to the EMS Safety Foundation
at a PC/Laptop near you, March 15, 2012
Innovation, Collaboration and Knowledge Transfer and Policy
Starting at 2pm EDT USA
Please do log in for sound checks from 1.15 pm

TRB Safety Systems, Strategies and Solutions Summit Overview, EMS Today, and Rettmobil 2012

Nadine Levick, MD MPH
Research Director, EMS Safety Foundation
CEO, Objective Safety
New York, NY

Innovation, Collaboration & Knowledge Transfer
www.EMSSafetyFoundation.org
Background:

- EMS Safety Foundation has been established to fill a gap in
  - technical knowledge transfer
  - practical interdisciplinary R & D
  - evaluation and implementation of system safety enhancements for EMS and Medical Transport
- It is a not-for-profit institute
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 by promoting and advancing EMS safety innovation, collaboration, research, knowledge transfer, education and safety information dissemination.
In a nutshell

- EMS Safety Foundation is a not-for-profit multidisciplinary virtual think tank and test bed for safety innovation and knowledge transfer
- It is a virtual network integrating the end users and the technical experts
- A tool to enhance the safety of delivery of EMS services
R & D
“Ripoff and Duplicate”

- Avoid reinventing the wheel at all costs
- Where are the best practices that we need to transfer knowledge from
So what is a Webinar?

A Webinar is:

- Real time interactive web technology
- No other hardware is necessary aside from a computer connected to the internet and a microphone - if you choose to speak
- These interactive seminars can also be stored for later asynchronous use
Webinar Basics

- Raise Hand
- Text messaging
- Type in your name and location
- The ‘mic’

In session for 2 minutes.
use white board tools to mark your location...

- pick up the ‘blue pen tool’ and choose your color
Today’s Webinar is recorded!
The presentation and

all comments typed in the text box

will be available for viewing via the
www.EMSSSafetyFoundation.org
web site within 72 hours
EMS Safety Foundation’s Fourth Year Anniversary!!
Today’s Webinar

- Will cover -
  - NAEMT Safety Course Update
  - Social networking and you – etags and twitter
  - The iRescU project
  - Rettmobil Delegation Plans for May 8-11 2012
  - Activities for 2012
SOCIAL MEDIA WEEK
REALTIME INFOGRAPHICS
OFFICIAL #SMW12 RECAP

PHYSICAL PARTICIPATION
36,000 attendees
1,050 events
493 locations
12 cities
5 continents
9 countries
1 amazing week

INTERNET PARTICIPATION
150,000 connected online
57,000 connected on mobile devices
110,000 people watched live
8,200 hours of streamed video
180 countries represented

PARTICIPANT FIRST LANGUAGE
57% English
7% Japanese
4% Chinese
2% Brazilian Portuguese
2% French
28% Other

PARTICIPANT GENDER
51% Male
49% Female

PARTICIPANT AGE
18% Under 21
42% 21-35
35% 36-50
5% Over 50

SOCIAL IMPRESSION
275,000 SMW12 mentions
22,000 Foursquare checkins
300 million total social reach

GROWTH
Registrants
30,000 Feb 2011
36,000
Cities
9 Feb 2011
12
Events
710 Feb 2011
1,050
Tweets
75,000 Feb 2011
275,000

EMSSafetyFoundation.org
Emergency Medical Services (EMS) Systems, Safety Strategies, and Solutions Summit

February 29, 2012
The Keck Center of the National Academies
Washington, D.C.

The National Academies Transportation Research Boards ANB10(5) EMS Safety Subcommittee is holding its third EMS Safety Summit. This EMS Safety Systems, Strategies and Solutions Summit will be a comprehensive one day interdisciplinary, interactive onsite and broadcast event held in Washington DC at the Keck Center to coincide with the EMS Today Conference and Exposition on February 29th, 2012 – where there shall be a satellite site for the Summit during EMS Today preconvention activities.

AJ Heightman, Editor of JEMS and EMS icon, will be giving the opening address beamed from the satellite site at EMS Today. This one day EMS Safety Systems, Strategies and Solutions Summit will comprehensively cover the spectrum of cutting edge approaches to optimizing the systems safety of EMS and Medical Transport operations.

The Summit will include an interdisciplinary update on EMS and Medical Transport Safety development over the previous 24 months. There will be a focus on new systems safety technology solutions that are now available and also those under development, innovative fleet and vehicle solutions underway and future concepts, and the human factors issues integrating task analysis and vehicle and transportation system design and including culture of safety, change tolerance and generational challenges, hours of service concepts and issues pertaining to the impaired driver, as well as new initiatives in testing and standards.

As with past TRB EMS Summits; participation will be both onsite and via a virtual live Webinar. Preliminary information is also available at http://www.objectivesafety.net/TRBSSummit2012.htm
TRB 2012 Summit – addressed the key and interdisciplinary applied solutions issues, in one day – please seek that information out. www.objectivesafety.net/TRBSummit2012.htm

There have been two prior TRB Summits held, 2008, 2009 and both with vehicle engineering and transportation systems technical expertise

National Academies Transportation Research Board
2012 EMS Safety Summit

- One Day event, 30 presentations
- Held in Washington DC, Keck Center
- Simulcast Live to EMS Today
- Live Webinar Access - globally
- Over 100 participants live across 3 continents
- Greater that 10,000 downloads of handouts within the first week!!
EMS Safety Systems Strategies and Solutions Summit
February, 29, 2012

- How do we balance the system safety for the patient provider and public
- What is a safe speed
- What metrics drive safety decision making
- How many hours are safe before we are impaired
- How many hours of EVOC makes the system safer
- What are the cost and risk benefits of simulators
- What benchmarks in other industries are relevant to EMS
- What are the determinants of system safety
- What technologies enhance system safety performance
- What strategies work best with reaching out to each generation

Open access, all EMS related organizations notified and invited, and beamed live gratis also!
Thank you to all our speakers and moderators

From ANB10(5)
The 2012 TRB EMS Safety Summit
print this page & your smart phone will play the 8 sessions from the eTags! (even in B&W)

- Opening Address: A.J. Heightman
- Safety Developments Update – N. Levick
- Research needs assessment forms explained – E. Frazer

1: Data and Recent Initiatives
2: Transport, Human Factors - Bridging Diverse Disciplines
3: Testing and Standards
4: New systems safety technology solutions & telematics
5: Fleet management strategies
6: Innovative Vehicle Design
7: Operationalizing Safety
8: Panel: How to optimize the safety of your existing fleet

Wrap up – from Prof. Art Cooper
Opening Address
– AJ Heightman
Communication Technology trends

Rise and Fall of Gadgets

NOTE: 2010 data are estimates and 2011 data are projections. GRAPHIC: Alicia Parlapiano / The Washington Post - January 10, 2011
January 2012, USA

Smartphone penetration by age and income

Source: Nielsen
A History of the Business of Social Media...

1978
- Vint Cerf, Vint and Randy Saroff, two computer historians, develop the computerized bulletin board system (BBS) to allow friends in different locations to make announcements and share information.

1982
- Students at the University of British Columbia's computer science program begin to use the Network News Protocol (NNP) to share information.

1984
- The Internet is first used for education.

1992
- The World Wide Web is introduced, allowing users to access information and resources through hyperlinks.

1994
- MySpace, a social networking site, is launched.

1997
- Google launches its search engine, changing the way people search for information.

1998
- Friendster, one of the first social networking sites, is launched.

1999
- AOL Instant Messenger (AIM) is introduced.

2001
- YouTube launches.

2003
- Barack Obama launches his presidential campaign on MySpace.

2004
- Facebook launches.

2005
- Facebook surpasses Friendster in popularity.

2006
- MySpace surpasses Friendster in popularity.

2007
- Twitter launches.

2008
- Facebook becomes the most popular social networking site.

2010
- Facebook surpasses MySpace in popularity.

2012
- Pinterest launches.

2013
- Facebook introduces Facebook Connect, allowing users to log in to other websites using their Facebook credentials.

2014
- Facebook introduces Facebook Lite, a mobile app that allows users to access Facebook on their mobile devices.

2015
- Facebook launches Facebook Stories, allowing users to share their day-to-day activities.

2016
- Facebook launches Facebook Live, allowing users to stream videos in real-time.

2017
- Facebook launches Facebook Watch, a platform for original video content.

2018
- Facebook launches Facebook Shops, allowing businesses to sell products directly on the platform.

2019
- Facebook launches Facebook Pay, a payment system for users to make purchases on the platform.

2020
- Facebook introduces Facebook Community Help Center, providing users with resources to help others.

2021
- Facebook launches Facebook Connect, allowing users to log in to other websites using their Facebook credentials.

2022
- Facebook launches Facebook Connect, allowing users to log in to other websites using their Facebook credentials.

2023
- Facebook launches Facebook Connect, allowing users to log in to other websites using their Facebook credentials.

2024
- Facebook launches Facebook Connect, allowing users to log in to other websites using their Facebook credentials.
1980’s Then…

And

NOW!…
1980’s Then….

And 2009…
Now...
Rules/Policies Addressing Known Hazards

• Federal Motor Carrier Safety Administration (FMCSA)
  – Cell phone use – November 2011
  – Hours of Service – December 2011
Nov 2011, Hand Held Cell Phone Ban

Dec 2011, New FMCSA Hours of Service


NOTE: A new Hours-of-Service (HOS) Final Rule was issued on December 22, 2011. For details, visit the HOS Final Rule page to view the complete rule, summary of changes, questions & answers, and other related information.

The Hours-of-Service regulations (49 CFR Part 395) put limits in place for when and how long commercial motor vehicle (CMV) drivers may drive. These regulations are based on an exhaustive scientific review and are designed to ensure truck drivers get the necessary rest to perform safe operations. FMCSA also reviewed existing fatigue research and worked with organizations like the Transportation Research Board of the National Academies and the National Institute for Occupational Safety in setting these HOS rules.

The regulations are designed to continue the downward trend in truck fatalities and maintain motor carrier operational efficiencies. Although the HOS regulations are found in Part 395 of the Federal Motor Carrier Safety Regulations, many States have identical or similar regulations for intrastate traffic.

Who must comply with the Hours-of-Service Regulations? Most drivers must follow the HOS Regulations if they drive a commercial motor vehicle, or CMV.

In general, a CMV is a vehicle that is used as part of a business and is involved in interstate commerce and fits any of these descriptions:
- Weighs 10,001 pounds or more
- Has a gross vehicle weight rating or gross combination weight rating of 10,001 pounds or more
- Is designed or used to transport 16 or more passengers (including the driver) not for compensation
- Is designed or used to transport 9 or more passengers (including the driver) for compensation
- A vehicle that is involved in Interstate or intrastate commerce and is transporting hazardous materials in a quantity requiring placards is also considered a CMV.
New Fleet Operations Standards

- ISO 39001
- ANSI/ASSE Z.15

New Vehicle Standards

- NFPA 1917

New Equipment Mounting Testing Standards

- SAE 2917, 2956
Change and Innovation

- Improved data systems for injury
- Enhanced data on denominator
- New technologies
- New policies/standards
- Interdisciplinary collaboration
New Safety Data

- TRB 2012
- 2011 National EMS Assessment
- 2011 NFPA
- TZD EMS
- NCHRP 17-51
- FARS/MMUCC
- NEMSIS
- BLS
Fatal injuries among EMTs and paramedics, 2003-2010*

- **Aircraft incidents**: 34%
- **Highway incidents**: 32%
- **Other transportation incidents**: 7%
- **Struck by vehicle**: 7%
- **Assaults and violent acts**: 8%
- **Other**: 11%

* Data for 2010 are preliminary. Percents may not add to 100 due to rounding.

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries

Total = 97
Survey of Occupational Injuries and Illnesses (SOII)—Nonfatal data

– Data obtained from an establishment survey based on OSHA recordkeeping logs.

– National data prior to 2008:
  • Cover private wage and salary workers only
  • Exclude volunteers unless compensated

– Data for 2008 and beyond:
  • Include paid State and local government workers

– Case and demographic characteristics:
  • Available for cases with days away from work only
Cases with days away from work among EMTs and paramedics, 2010

- In lifting: 38%
- Overexertion: 56%
- Other overexertion: 18%
- Bodily reaction: 11%
- Falls: 9%
- Transportation incidents: 8%
- Contacts with objects or equipment: 8%
- Other: 8%

Total = 8,360

Number of days away from work among EMTs and paramedics, 2010

- 1 day: 10%
- 2 days: 16%
- 3-5 days: 22%
- 6-10 days: 14%
- 11-20 days: 10%
- 21-30 days: 4%
- 31 or more: 24%

Total cases = 8,360

Median = 6 days away from work

Contact info

• Website:  http://www.bls.gov/iif/home.htm

• Data request telephone:  (202) 691-6170

• Data request e-mail:  iifstaff@bls.gov

• E-mail:  Windau.Janice@bls.gov
Federal Agency Update

- NTSB – www.NTSB.gov
- FEMA - www.FEMA.gov
- DHS/NIST/NIOSH – www.NIST.gov
- NHTSA/NEMSAC - www.EMS.gov
- CDC – www.CDC.gov
NIST and Partners Seek Input on Safer Ambulance Designs

From NIST Tech Beat: November 22, 2011

Contact: Michael E. Newman
301-975-3025

The National Institute of Standards and Technology (NIST) is seeking input from paramedics, emergency medical technicians (EMTs) and other interested parties on the development of new design guidelines for ambulances to reduce the crash risk to emergency workers.

Emergency medical service (EMS) workers riding in the back of ambulances are at high risk of suffering injuries during a crash or a maneuver to avoid a crash if they’re not using restraints. However, restraints make it difficult to access and treat patients while in route to a hospital. To meet the challenge of finding a balance between these two demands, NIST, the Department of Homeland Security’s Human Factors and Behavioral Sciences Division (DHS HFD) and the National Institute of Occupational Safety and Health (NIOSH) are developing design guidelines for ambulance patient compartments that maximize safety without compromising effectiveness.

These guidelines will be used to update current, and enhance emerging, ambulance design criteria, such as National Fire Protection Association (NFPA) 1917, the “Standard for Automotive Ambulances.”

To gather input for the guidelines from a broad cross-section of the key stakeholders, EMTs and paramedics, the three agencies are conducting an anonymous web survey from Nov. 28, 2011, to Dec. 28, 2011. Insight and opinions from this survey will supplement data previously gathered from focus groups, interviews with individual EMS workers, visits to equipment manufacturers and EMS stations, and “ride-along” experiences aboard on-duty ambulances.

The web survey can be found at either the NIST Office of Law Enforcement Standards site, www.nist.gov/oles, or the DHS Responder Knowledge Database site, www.rkb.us.

For more information, or to get more involved in the effort to improve safety in ambulance patient compartments, contact Darren Wilson, DHS, at (202) 254-6657 or darren.wilson@dhs.gov; Larry Avery, BMT Designers & Planners, at (919) 713-0383 or lavery@dandp.com; or Jennifer Marshall, NIST, at (301) 975-3396 or jennifer.marshall@nist.gov.
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
First-year Progress
(Course Rollout @ EMS Today, March 2011)

• 11 State and National Courses conducted
• 214 Local & Regional courses held
• 1,445 EMS Practitioners trained
• 401 Instructors certified
• Active programs in 30 states
Japanese Paramedic Association
Tokyo, Japan
December 17, 2011
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)

or email info@naemt.org
Culture – “the way we do things around here”

Organizational culture is defined by its mission, vision and values

Organizational Safety Culture: we want a culture that inspires employees and managers to work together to achieve organizational goals and expectations in a cohesive, safe and progressive manner.

Key elements of organizational safety culture:

• I. Informed Culture
• II. Just Culture
• III. Flexible Culture
• IV. Learning Culture
National EMS Culture of Safety Project

Sept 2010 – Sept 2013
In Summer 2012 – ASHGATE will publish a CAMTS reference entitled: “Safety and Quality in Medical Transport Systems: Creating an Effective Culture”
Bridging Ergonomics Operational Task Analysis and Automotive Safety

- Definitions
- Automotive Safety Technology
- The Ambulance Challenge
- Bridging the Gap
- Opportunities
ACTIVE SAFETY

AVOIDS THIS:
AMBULANCE DESIGN CHALLENGE

Seated and Restrained, But can you get the job done?

Courtesy of AmbulanceRanger
## BRIDGING the GAP

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<tr>
<th>BASIC PRINCIPLES: ERGONOMICS</th>
<th>BASIC PRINCIPLES: AUTO SAFETY</th>
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</thead>
<tbody>
<tr>
<td>Maintain Health (Safety) and Productivity</td>
<td>Prevent Accidents, Minimize Consequences</td>
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</tbody>
</table>

- Bio Metric Range of Customers
- Seated when traveling

- Task Analysis / Performance
  - Provide resources required
  - Appropriate reach / motion
  - Appropriate strength
  - Maintain task forces below injury levels
    - Repetitive events

- Passive Safety
  - Restrain occupants in seats
  - Maintain seat integrity
  - Maintain passenger compartment Integrity
  - Minimize deceleration forces
    - Provide crush zones
  - Provide friendly surfaces at impact zones
  - Maintain force levels below injury levels
    - Singular events
Bridging Ergonomics, Operational Task Analysis and Automotive Safety

Chris Fitzgerald (Ergonomist)
Ergonomics

• …interactions of humans within a system.
• …optimizing human well being and system performance.
• Iterative approach - there are benefits to be had!

• Key (physical) factors:
  ▪ Task analysis – what people do
  ▪ Anthropometry – body size
  ▪ Biomechanics – human movement

  ▪ Other factors:
    ▪ Lighting, air quality and thermal comfort
    ▪ Usability and cognition
Task analysis – what people do

• Operational task analysis
  • Defining what people (paramedics) do
  • Develop and test designs that optimize paramedic / patient / equipment placement and performance
• … in practical terms tasks analysis defines the system
• Can be conducted prospectively for all known or anticipated interactions (you end up with a lot of data)
• Once task behaviours are known design consideration for safety and efficiency can be made and tested
• Task analysis should involve “operators” and represent a true description of what is done
Anthropometry – Body Size

• Who are we designing for?
  • Patients
  • Paramedics and other occupants

• Need to accommodate full range of the population
  • Gender (to reflect workforce participation rates)
  • Body size
  • Functional task performance and biomechanics
Gender / Body Size

Two Women:
Same Sitting Height (1-D)
Side View 3-D Scans

Images courtesy of Dr Kathleen Robinette
US Airforce
Automotive Safety the basics

• Ergonomics design to occur within the context of automotive occupant safety principles:
  • Forward / rearward facing seats
  • No side facing seats (during transit)
  • Restraint of all persons at all times
  • Restraint of equipment (at least 10 G in all directions + 20 G in forward direction)

• Design challenge:
  • Fitting the users, occupants and equipment
  • Create accessibility to equipment / tasks
  • Retaining these occupant safety principles

Ultimately, this requires mobility with the ambulance
Summary

Systems
• Effective application of ergonomics can help to define the system in a meaningful and useful way

Strategies
• Task analysis
• Anthropometry
• Functional task performance / biomechanics
• In the context of inherent automotive safety and occupant protection needs

Solutions
• Creative designs that orient the users and occupants safely, provide mobility within the ambulance while people and objects are restrained.
Information and Technology Transfer

• New Tools
• New Collaborations
• New Platforms
• New Events
• New Organizations
• Webinar, Podcasts, Blogs, Skype and Twitter
Increasing focus

- TRB - ANB10(5)
- RITA/ITS/DOT
- Traffic Records Forum
- DHS/NIST/NIOSH
- TIMS
- ASSE
- SAE
- EMS Safety Foundation
Interdisciplinary Innovation Consortium
The 10th RETTmobil has again fulfilled the expectations. "We are absolutely satisfied with the positive acknowledgement," summarized Chairman Manfred Hommel of the Community of Interests of Manufacturers of Ambulances and Emergency Vehicles (IKR). "90 percent of the exhibitors are extremely satisfied with the fair and the business development", said Hommel. He is also happy about the communication with representatives and personnel from aid organizations, fire departments, army and THW: "The RETTmobil is the outstanding platform for everyone involved in emergency services." Hommel himself was a participant in a video-conference of the EMS Safety Foundation, for which a delegation from the U.S. had come to RETTmobil in order to discuss the issue of safety and compare the quality of European and American technical standards with participants from all over the world via the Internet. The recorded video-stream is available to all registered users at:
Summary

- Collaboration
  - Interdisciplinary
  - Interagency
  - International
Fleet and Vehicle Standards

• Fleet
  – FMCSA/Exemptions
  – ANSI/ASSE Z.15
  – ISO 39001 – December 2012

• Vehicle
  – AMD
  – KKK
  – NFPA
  – ASTM
  – FMVSS
  – SAE
  – International - CEN/ASA
Federal Motor Carrier Safety Administration - FMCSA

- http://www.fmcsa.dot.gov/
NFPA 1917: STANDARD FOR AUTOMOTIVE AMBULANCES

Alert me to receive e-mail updates on this document.  Manage my alerts (sign-in required).

Committee Members, click here and sign in to view technical committee documents.

This is a Proposed Document
See Next edition tab for revision cycle information and the ROP draft.

Document scope
Read the document scope
SAE Ambulance Equipment mounting testing standards

Frontal Impact SAE 2917, published May 2010
Side Impact SAE 2956, published June 2011
Vehicle Safety Dynamic Testing Types

- Deceleration Sled Tests (not usually a full vehicle) – no intrusion
- Barrier impact tests – intrusion
- Full vehicle to vehicle tests – intrusion
- Computer predictive modeling - must be based on real world injury and vehicle crashworthiness data
International Ambulance Design Safety and Occupant Protection Standards

In existence since 1999

• Australia – ASA
• Europe - CEN
Types of Testing for Ambulance Safety

• A Comparison of Standards and Testing
  – Automotive
  – Medium Truck
  – Ambulance
Ambulance Standards and Testing

- KKK A 1822F: Purchasing Guideline
  - “Minimum Specification and performance parameters”

- AMD-001-025: Manufacturing Guideline

- ASTM F2020-02a: Standard Practice

  - Soon to be released
Ambulance Standards and Testing

• Interrelated – mostly paraphrasing each other’s requirements

• Self certified
Dispatch Systems, Basic to Cutting Edge

• IT and Communication System
• Direct Relationship to Safe Vehicle Operations
• Community Needs
• Public Safety Integrated Systems
• Reporting Integration
• Instruction Help to Callers
Emergency Use is Predictable, and Increasing Based on an Aging Population

EMS Demand 100/1000 Population
Transport 80%

EMS

Total use 415 / 1000 Population
73% Walk-Ins
17% Arrival by EMS

Transfer 2%
Admit 17%
Treat/Go 81%

Walk-ins to ED 335 / 1000 Population

Population

Transportion Research Board of the National Academies
Major Challenges

• Unpredictable Callers
• Time Limitations
• 911 Calls in the Public Domain (should be Privileged and Confidential)
• Call Locating with the Challenge of Mobile Phones
• Can’t use Text, SMS, Twitter….
• Newest Challenge to 911 Centers – “Lift Assist”. At home = Good. “How Big”
Solutions

- Call Taking Assistance
- Resource Management to Reduce Time to Response and Get Appropriate Response with Minimal Duplication
- Support for Medical Mgt and Transport
- Training the Community
Response, Emergency Staging, Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.)

Linda D. Dodge
ITS Joint Program Office, US DOT

EMS Subcommittee of the TRB ANB10(5)
EMS Transport Safety Summit

February 29th, 2012
Overview

• USDOT ITS Program Background
• Traffic Incident Management & ITS
• Mobility Program
• NG9-1-1 Status
• R.E.S.C.U.M.E. Status and Plans
# ITS Research Program

## Applications

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<th>Mobility</th>
<th>Environment</th>
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<td>V2V</td>
<td>Real Time Data Capture &amp; Management</td>
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<tr>
<td>V2I</td>
<td>Dynamic Mobility Applications</td>
<td>Road Weather Applications</td>
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<tr>
<td>Safety Pilot</td>
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## Technology

- Harmonization of International Standards & Architecture
- Human Factors
- Systems Engineering
- Certification
- Test Environments

## Policy

- Deployment Scenarios
- Financing & Investment Models
- Operations & Governance
- Institutional Issues

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TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES
Next Generation 911 Initiative

Long Term Goal:

To enable the general public to make a 911 “call” (any real-time communication – voice, text, or video) from any wired, wireless, or Internet Protocol (IP)-based device, to the PSAP, and enable data sharing with the emergency communication network

Major Milestones:

• National architecture and high-level design for NG911 System
• Proof of Concept Demonstration
• Transition plan for NG9-1-1 implementation
For More Information

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Chief of Staff and ITS Public Safety Program Manager
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linda.dodge@dot.gov

http://www.its.dot.gov/
Medavie EMS
Island EMS

Code 1 Speed Restriction Policy
The Policy

- Medavie EMS implemented a policy for its staff that restricted paramedics from driving no more than 10 km over the speed limit during an emergency call except when in four lane 100 series highways were they were permitted to exceed the speed limit by 20 km/h over the posted speed limit.

- One of the main reasons that the policy was implemented was that the evidence showed responding to emergencies with higher speeds meant greater risk, and the time saved was not worth the risk to the staff, patients, and public.
The reactions

Paramedics worried by speed limit

The union that represents P.E.I. paramedics is upset with a new rule that restricts the speed of ambulances in the Maritimes.

Island EMS introduced the change in November, but the union says it's not working.

Even with sirens blaring, P.E.I. ambulances have to watch their speed. Island EMS first introduced a cap on how fast they can go four years ago, and the rule was revised again in November.

"One hundred and 20 going down University Avenue is not safe," Craig

"They couldn't come up with a single case where an accident that was speed-related occurred with an ambulance on Prince Edward Island."

— Bill MacKinnon, CUPE

MACLEANS.CA

Watch your speed, it's an emergency
Paramedics in P.E.I. can only go 10 km/h above the limit in town
by Rachel Mandelson on Thursday, April 1, 2010 9:00am - 1 Comment

When responding to medical emergencies, paramedics say that exceeding the speed limit is just part of the job. But how fast is too fast? Citing safety concerns, Island EMS, the company that operates ambulances on Prince Edward Island, has tightened its cap on speeds—despite the fervent protestations of the paramedics union. "We're not talking about these people wanting to be
Arbitration board refuses to put brakes on Island EMS speed policy

Published on August 2, 2011
Transcontinental Staff

Paramedics in the province will have to continue following an Island EMS speed policy or face disciplinary action says, the president of CUPE local 3324.
Solution?

- Better Communication to stakeholders, staff and members of the public
- Education on the risks of vehicle safety
- System Solutions not just policies
- Time – remember when this was normal?
Impaired/Distracted Driving/Hours of Service

1. Driver Fitness – background checks and driver selection standards – goal rule out unfit drivers

2. Impairment – not just drugs/alcohol also fatigue and distraction

3. Hours of Service- learn from FRA, TRA & DOT limits

4. Distracted Driving – focus on driving
Distracted Driving

- Distracted driving is any activity that could divert a person's attention away from the primary task of driving.

- Effects of cell phone use:
  - delays reaction time as if you had .08 blood alcohol concentration,
  - increases crash chances by 4X for handheld phone & **23X by Texting**
Types of Distraction:

• Visual – takes your eyes off road.
• Cognitive - takes your mind off the road
• Manual - takes your hands off the wheel
• Auditory - takes your focus off the road

• Tasks that can be a driving distraction often fit into more than one category.
DOT HOS Rules

• Limits established for on-duty hours
• Establishes minimum levels of off-duty time
  8 hours if on duty less than 12 hours FRA or
  if over 12 hours then 10 hour off-duty time
• Commercial airline pilot can fly up to 100
  hrs/month
• Adopts 60/70 hour weekly maximum for
  truck drivers, 10 hour off-duty time
Summary

• Systems –
  – Evaluate your level of fleet safety systems in your service for Fatigue Mgmt, Driver Fitness, & Focused Driving

• Strategies –
  – Increase focus on fleet safety to same level as patient and employee safety

• Solutions –
  – Audits, Perception Survey to address behavior change in all levels of organization, Education, & use of Technology
A lot is now possible and for less!

- Driver behavior
- Vehicle behavior
- Roadside ITS
- Fuel consumption/Economics
- Resource modeling
Fleet Management technologies

- ACETech/Ferno
- FleetEyes – Intermedix
- Zoll rescuenet and roadsafety fleet management systems
- Marvlis
- Telematicus
- Optima
- Northrop Grummen
Spectrum of dimensions

- CAD
- Resource allocation
- Fleet performance –
  - Monitoring: System that gives management data of vehicle efficiency and use
  - Feedback: Directly to drivers at the wheel
- Public Alerts
# Fleet Safety Solutions

**Policies and Programs**

- Road Safety - Vehicle Monitoring System
  - Threshold Events measured against miles driven
  - Individual and Operation Driven Reporting

## Force Count

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<th>Distance</th>
<th>Total</th>
<th>High</th>
<th>Total</th>
<th>High</th>
<th>Seat Belt</th>
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<th>Idles (Min)</th>
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**STANDARD LINE**

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Monthly Driver Reports

- Identifies high risk behaviors
- Provides real time feedback to driver
- Provides reports for employee evaluation
Measuring Our Success at Sunstar Paramedics

5 Year Road Safety Report - Unsafe Reverses

Years
Jan-06 Jan-11

Unsafe Reverses
0 2000 4000 6000 8000 10000 12000 14000
Call Details

429, Sunstar Ambulance/ALS
Position: 27° 49.51′ N, 82° 42.13′ W
Heading: 000, Speed: 0.00 mph, Last Update: 13:40:00 UTC
Crew: FRIEDMAN, SCOTT, CARRIGG, COLLEEN

Responding to Incident:
2012-02-270118-A
Nature: 10A01 - Chest Pain (Non-Traumatic), 1 - Emergency, Level: ALS 1, PU Time: 08:04:14

Transporting to Facility:
NORTHSIDE MEDICAL CENTER HOSPITAL

Status: Transporting (20 mins)

Incident Details: 10, 2012-02-270118-A
Nature: 10A01 - Chest Pain (Non-Traumatic)
Run Number: 2241505
6767 86TH AV N Verify location of patient
PINEY ISLAND
FL: 33781
(727) 548-5566 Ext
PAU: GULF SHORE HEALTH and REHAB-SNF
DIO: NORTHSIDE MEDICAL CENTER HOSPITAL
08:04:14
Comments: Building Name: GULF SHORE NURSING CENTER Addr 2: 508 Jurisdiction: PP

TRB TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES
Summary

Through these technologies:

- We realized dramatic change in our drivers' attitude toward safety
- We have evidence based data to use for individual driver training and refresher courses
- We are able to identify drivers that fail to align themselves with our mission of safety
Niagara – Acetech Integrated Vehicle Intelligence System

Fully integrated, vehicle performance monitoring and control system with on-board intelligence.

- Safety Systems
- Eco-Run Module Benefits
- Asset Protection Benefits
Safety System (Integrated into AVI)

- Speeding infractions, Unbelted, Unsecured occupants
- Lights and siren compliance
- Create Driver Safety Reports - provide feedback to employees
- Set pre-defined speed limiters
Niagara EMS
Decrease in Speeding Infractions

TRB
TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES
Innovative vehicle technical aspects

• Sprinter Ambulances Provide Safer Environment/Retain Automotive Safety Features
• Forward Facing Seats Critical
• Reach Patients from Belted Position
• Leadership, Communicate, Culture, Vehicle, Accountability
• Science & Data Based
Interiors Based on European and Canadian Specs Which Meet Gov’t Safety Standards
The Motorcycle Medic
Ambulance Sparing

• In almost ¼ (23.5%) of all motorcycle missions ambulance use was avoided!

Rural Patient Transport Device - AmbiCycle™

US Patent Pending Jan 09
Dr. Mark E. Benden CPE
Dr. Eric Wilke
Integrating Ergonomics, Automotive Safety and Cost Efficiency

“designing medical interiors for optimal safety”

Chris Fitzgerald (Ergonomist)
“Systems” approach

- Incorporation of ergonomics in ambulance design reflects a systems approach
- Accommodation of people, equipment and resources occurs in the context of a range of interactions and a need to establish and maintain minimum safety
- Ergonomics and automotive safety requirements can be used to define the system
- Efficient, safe and functional design should deliver cost efficiencies (vehicle operation, human resources and equipment)
Seating – beside patient

- Forward facing seats only
- Mobility of the seat forward / rearward and sideways (if needed) and stretcher an advantage
- Paramedic restrained
- Paramedic can access equipment and patient during transit while restrained
- Head impact zones avoided or minimised
Seating – at head end of patient

- Forward facing seats only
- Mobility of the seat forward / rearward
- Paramedic restrained
- Paramedic can access equipment and patient during transit while restrained
- Head impact zones avoided or minimised
Summary

Systems
• Effective application of ergonomics can help to define the system in a meaningful and useful way

Strategies
• Consider operational tasks away from the ambulance to ensure equipment is accommodated
• Consider operational tasks and equipment use within the ambulance for design success
• Design within the context of inherent automotive safety and occupant protection needs

Solutions
• Creative designs that orient the users and occupants safely, provide mobility within the ambulance and enable people and objects to be restrained.
Peds and Neonate Transport

• Special population
• Unique challenges
• Potential pitfalls
• Innovative approaches
  – USA
  – Internationally
It is a SYSTEM!

- Child in a vehicle with other occupants and equipment
- Vehicle in a Fleet
- Fleet in a region
Melbourne, Australia Neonatal Ambulance – in transit mode
Pittsburgh, Pediatric Transport Ambulance USA
Oslo and Akershus ambulance service

New Sprinter 319
Safety

• Vehicle
  – All electronic safety systems:
    • A-ESP, ABS, etc.
  – Crashworthiness:
    • Original chassis
    • Seat belt tensioner
  – Internal passive safety
    • Impact zones
    • No sharp edges
    • Securing equipment
User friendly

• All necessary equipment should be reach from the seats without loosing the seat belt.
• The stretcher platform can be moved into 3 different positions
What Air Medical Can Teach Us

I. Policies and Practices
II. Learning for Our Mistakes
III. Fatigue Mitigation
IV. Safety Management Systems
V. AMRM
Air Medical Resource Management - AMRM

CRM specific to air crews and includes:

- Communication processes and Decision Behavior
  Briefings
  Inquiry/advocacy/assertion
  Crew self critique
  Conflict resolution
- Team Building and Maintenance

- Workload management and Situation Awareness
Summary

We can learn from each other: Ground and Air - we are all moving while caring for patients.

Safety vigilance for ground is just as important as for air.

We need the data for ground incidents and accidents in one strategic location so we can track, trend and analyze as we do for air accidents to mitigate the risks and hazards.
Untapped Opportunities: Resource Utilization

• Emergency medical dispatch is a critical gatekeeper for resource allocation and distribution
• Paramedic versus emergency medical technician
• Air medical versus ground transport
• Critical care ground transport units
• Traffic and bystander management
Untapped Opportunities: Resource Utilization

• GPS systems
• Regionalized systems of emergency care and response
• Identification of high risk roadways and intersections
• Mass casualty incident emergency response plans/drills
• Telemedicine: Prehospital /Interfacility
DATA:
EMS IS NOT AN ISLAND

• Impact of formally trained emergency medical dispatchers on resource utilization and patient outcomes
• Impact of mandatory restraint use on EMS personnel and patient injury patterns
• Fatalities
• Inclusion of EMS in traffic incident management plans/drills
Relative benefit: Data Sharing Between PSAPs, the Scene, Emergency Response and Hospitals

- Predictors of Injury Severity
- Mobile Apps
- Route selection & guidance
Model Inventory of Emergency Care Elements “MIECE”

Example of how a MIECE color-coded road map might appear:

- **Green** – high level of emergency care resources
- **Yellow** – medium level of emergency care resources
- **Red** – low level of emergency care resources
BENEFITS SQUARED

• Improvements to EMS overall as a transportation mode
• Improved outcomes for patients with time-urgent conditions
• Advancements in telemedicine & teletrauma
• Benefits Cubed: Counterbalancing the rural disparity
Wrap Up

- Hippocrates’ First Precept
  - Rarely fully translated
  - First, do no harm...
  - Then, do some good!

- The Three Es
  - Efficacy
  - Effectiveness
  - Efficiency
Wrap Up

• What’s old in EMS safety?
  – Inadequate funding (old equipment)
  – Inadequate training (esp volunteers)
  – “We’ve always done it this way”

• What’s new in EMS safety?
  – Exponential growth in teleinformatics
  – Better vehicle, system engineering
  – Increasing awareness, safety culture
Wrap Up

• “Signal” research we can do now
  – Which calls truly need a hot response?
    • High performance simulators may help
  – How much time do L&S really save?
    • Apocryphal California “Yellow cab trial”
  – True cost benefit analysis of L&S use
    • How many lives/dollars are saved/lost?
  – Which patients may be eligible for T&R?
    • Leverage HCP-EMT telecommunications
Summary

• Systems
  – Physical Factors
  – Human Factors

• Strategies
  – Imagination, Innovation
  – Leadership, Followership

• Solutions
  – Vehicles, Ergonomics
  – Informatics, Telematics
Follow Objective Safety on twitter!

Click here
Follow the EMS Safety Foundation on twitter…

Welcome to the EMS Safety Foundation!

To get to the EMS Safety Foundation site and links on your smartphone, point your smartphone at this etag image above right (after you have downloaded free TagReader to your phone, see your App store or http://gettag.mobi).

For additional public access Objective Safety info click for http://www.objectivesafety.net or point your smartphone at this etag.

What is the EMS Safety Foundation?

This web page will update you with the latest info about this new and innovative EMS Safety Foundation. The EMS Safety Foundation, celebrates its fourth anniversary in March 2012, has provided an ongoing platform for identification and dissemination of reliable EMS safety information and innovation since its establishment. Many thanks to all who have worked so hard to make this initiative the collaborative resource it has become today.
Rettmobil 2012 – May 9-11th

The Fair of Records

The results of the 11th RETTmobil in Fulda: 21,850 trade visitors, satisfied exhibitors and organizers.

The 11th RETTmobil, after a successful course, came to an end on last Friday the 13th (!) at 5 P.M. The “overwhelming and total success” of the 11th RETTmobil from Wednesday to Friday in Fulda had not been expected by the makers of the exhibition. They are happy to report that the European trade fair for rescue and mobility has set new records. Never before have there been so many visitors and exhibitors. 21,850 trade visitors have been counted throughout the three opening days, accounting for a 10 percent increase over the previous year.

On the 70,000 square meter site with 16 buildings and a perfected off-road area were presented nearly 400 exhibitors and 45 companies from 17 nations. The majority of visitors - about 8,500 - came on Thursday to find out about the extensive range of goods and services. This year’s highlights in the area of mobility were the height rescue demonstrations as well as real-life crashes with stuntmen in prepared cars. The training sessions and workshops were very well attended, sometimes even overbooked.

The expectations have been exceeded, Manfred Hommel emphasized to the press. As the chairman of the Association of Manufacturers of Ambulances and Emergency Vehicles (IKR), the ideal sponsor of the event, said, the success confirmed the very good concept. The RETTmobil, which brings together an enormous high level of expertise in just three days, and for which there
Rettmobil 2012 Interest Sign Up link
http://www.emssafetyfoundation.org/amember/ProtectedICTEP/RETTmobilICTEP2012interestForm.htm

The EMS Safety Foundation

EMS Safety Foundation Rettmobil 2012 Delegation Interest Form

Are you interested to join in the EMS Safety Foundation's Rettmobil experience in Fulda, Germany May 2012?

If so could you please complete the info below. Once this form is completed, a detailed checklist will be forwarded to you.

The dates for Rettmobil are May 9-11 2012. The EMS Safety Foundation Delegation commences May 8th.

We look forward to your participation in this important project for enhancing the safety of EMS and developing new ideas and practice innovation.

Corporate Participation and Sponsorship of EMS Safety Foundation Rettmobil event
For industry partners and corporations wishing to sponsor the EMS Safety Foundation Rettmobil Delegation please click here

Innovation, Collaboration & Knowledge Transfer
www.EMSSafetyFoundation.org
Live from Rettmobil 2011
Public Access – www.EMSSafetyFoundation.org
Time line
March 2012 – October 2012

- Rettmobil Delegation 2012, May 8 – 11th, 2012, Fulda, Germany
- EMS Safety Foundation Rettmobil Workshops 2012
- EMS World Expo, October 29- Nov 2, 2012, New Orleans
- EMS Safety Foundation EMS Expo Workshop, Nov, 2, 2012, New Orleans
Thank you!

Any Questions??

an electronic recording and a .pdf handout of this presentation awaits EMS Safety Foundation Members online

www.EMSSafetyFoundation.org