Welcome to the National Academies, TRB 91st Annual Meeting  
“Transportation: Putting Innovation and People to Work”

The National Academies  
Transportation Research Board (TRB)  
EMS Transport Safety ANB10(5)  
January 2012 Subcommittee Meeting

Monday January 23rd at 10.15 am to  
at Marriott Park Tower Suite 8212

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

Emergency Medical Services Safety Subcommittee ANB10(5) of the Transportation Research Board  
Monday January 23rd, 2012  
10.15 am – 12.00 pm also via Webinar, Washington DC

Chair – Nadine Levick MD, MPH  
Co-Chair – Eileen Frazer RN

Sponsored by Transportation Safety Management Committee (ANB10) –

Webinar Basics

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

..use white board tools to mark your location..... Use your blue pen
Today’s Webinar is recorded!
The presentation and all comments typed in the text box

will be available for viewing via the www.objectivesafety.net web site within 72 hours

This year’s TRB theme - “Transportation: Putting Innovation and People to Work”

This morning’s Webinar

• Will cover:
  – Update on EMS Transport Safety
  – An overview of the TRB and opportunities for EMS
  – Research funding pathways via the TRB
  – Synopsis of TRB EMS Safety Subcommittee’s activities
  – TIMS network and NIST updates
  – ACEP and NAEMT Safety project updates
  – Innovation Research and technology presentations

Today’s AGENDA

1. Introductions
2. Sub-committee work program updates:
   a. Ambulance Transport Safety Summit 2012 – follow up
   b. Research Needs Statements - Research Topics Database
   c. Administrative issues:
      i. Liaison organizations –
      ii. Communications/Website –
      iii. Membership/Recruitment
      iv. 2013 TRB Session Topics and Calls for Papers
3. Related Updates –
   a. TIMS Network
   b. NIST DHS Project
   c. ACEP EMS Safety Culture Project
   d. NAEMT Safety Course development
4. Other business
5. Safety Innovation Presentations
6. Adjourn

Safety Innovation Presentations

• Commence at 11.00am EST 60 mins
  – Fleet Management Technologies
    • Telematicus – Simon Ralphs
    • ACETECH- Joe Bourgraf
  – Human Factors Issues – Chris Fitzgerald
  – Fleet Design Innovation
    • Careflite – Jim Swartz/Nadine Levick
    • Oslo University Ambulance – Ronald Rolfsen
What is EMS?

- Emergency Medical Services – (EMS)
- Emergency medical care, public health, public safety and patient transport
- Bridge between the community and the hospital
- Volunteer – professional
- Urban – rural
- Disaster response
- Majority of transports NOT critical or life threatening – (<3% are critical)

Transport related aspects of EMS

- dispatch of EMS vehicles
- transport policies and protocols
- vehicle fleets and vehicle design
- vehicle purchase standards
- Intelligent Transportation Systems technology
- driver training
- driver performance monitoring
- roadside and road design
- integrated traffic safety technologies
- scene safety and visibility
- safety data capture
- safety oversight

Balance of concerns and risk during transport

- Response and transport time
- Clinical care provision
- Occupant safety/protection
- Public Safety
Ambulance Transport Safety IS Complex AND Multidisciplinary

Epidemiological Data Collection ➔ Risk Management ➔ Public Safety

Ergonomic Research ➔ Transport Policy ➔ PPE

Biomechanical Automotive Safety ➔ Driver Training

Communications technology ➔ Safety Technology ➔ Regulations and Standards ➔ Fleet Safety Program

Negative impact on system performance…

• A medical error may kill a patient
  BUT
• An EMS crash can kill all those involved AND wipe out a rural EMS system AND negatively impact a regions response capacity……

How bad is the problem

USA EMS transport safety data estimates

• ~ 81,000 vehicles
• ~ 9,000 crashes a year
• ~ One fatality each week
  – ~ 2/3 pedestrians or occupants of other car
• ~10 serious injuries each day
• Cost estimates > $500 million annually

Ambulance transport a serious USA 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

In the USA there are more safety standards for moving cattle than for moving patients
The TRB and EMS

- **TRB Mission:**
  - To provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multi-modal.
- **TRB Goals:**
  - Conduct and promote knowledge.
  - Conduct and promote communications efforts.
  - Contribute to the professional development.
  - Conduct and promote collaborations.
  - Contribute to public’s understanding.
  - Act as an effective and impartial forum.
  - Promote collaboration.
  - Provide timely and informed advice.
- **Provides service to government, public, and scientific and engineering communities.**
- **A resource to the nation and to the transportation community worldwide.**
What is ANB 10 (5)?

Emergency Medical Services Safety Subcommittee, ANB 10 (5)
- Subcommittee of the Transportation Safety Management Committee ANB 10, of the Transportation Research Board of the National Academies

EMS Safety Subcommittee ANB10(5)
- Subcommittee supported by Transportation Safety Management ANB10
- Established July 2007
- First Subcommittee meeting – Jan 2008
- Chair, Nadine Levick MD, MPH
- Co-Chair, Eileen Frazer, RN
- Scope – Medical Transport Safety

ANB10 (5) TRB EMS Subcommittee Mission
- 'Bridging the gap between what we do and what is known - Enhancing ambulance transport safety through shared knowledge of technical data'.

Subcommittee structure
- Chair
- Co-Chair
- Administrator
- Secretary
- Project Manager
- Technical Sections
- Liaisons

Problem statement development in progress from 2008-2009
- Development and application of standardized definitions to capture EMS transport data across all agencies.
- Identifying ambulance fleet mix by state
- Determination of current state based emergency vehicle crash data capture and analysis; police, fire and EMS.
- Identifying the regional essential and optional equipment payload for ambulances
- Evidence for ambulance visibility and conspicuity
- Effectiveness and cost effectiveness of real time driver monitoring feedback devices for EMS services
**How do TRB Subcommittees work?**

**Multidisciplinary research**
- Encompassing all aspects of transportation
- The expertise that EMS needs to address its transportation safety challenges includes:
  - Systems design
  - Transport systems safety
  - Human factors
  - Vehicles
  - Vehicle operations
  - Air medical transport safety
  - Impaired operators
  - Road design and egress and access
  - Highway and operational hazards

**Fragmentation**
- There are now numerous and variably sound or technically sophisticated events occurring sporadically on ambulance safety – none under a transportation umbrella

**Fragmentation**
- ANB10(5) is an independent platform for:
  - Bringing fragmented information together
  - Uniting diverse disciplines
  - Focus on technically robust information

**ANB10 Directions Paper**

**Transportation Safety Management ANB10 3-Year Strategic Plan**
- [www.EMSSafetyFoundation.org/ANB10DraftStrategicPlanV2.pdf](http://www.EMSSafetyFoundation.org/ANB10DraftStrategicPlanV2.pdf)
The Transportation Research Board (TRB)

• History
TRB was established in 1920 as the National Advisory Board on Highway Research to provide a mechanism for the exchange of information and research results about highway technology.

TRB MISSION

• To provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal.

TRB divisions

• Technical Activities supports standing committees and task forces.
• Studies and Special Programs convenes specially appointed expert committees to conduct policy studies and program reviews, maintains the TRIS database, provides library services, prepares synthesis reports on behalf of the Cooperative Research Programs, and manages the Innovations Deserving Exploratory Analysis (IDEA) programs.

TRB research programs

• Cooperative Research Programs manages
  – National Cooperative Highway Research Program - NCHRP
  – Transit Cooperative Research Program - TCRP
  – Airport Cooperative Research Program – ACRP
  – National Cooperative Freight Research Program - NCFRP
  – Hazardous Materials Cooperative Research Program - HMCRP
• Strategic Highway Research Program 2 (SHRP-2)
  – manages a targeted, short-term, results-oriented program of contract research designed to advance highway performance and safety for U.S. highway users.
• Administration and Finance provides financial, information technology, and other administrative support, including financial oversight of the contracts and grants that support the work of TRB, administration of publications sales and distribution, and maintenance of benefits and services for sponsor and affiliate organizations.

Special role for EMS at TRB

• One of the Key 4 E’s
  – Engineering
  – Education
  – Enforcement
  – Emergency Medical Services

Transportation Research Board is an excellent resource... we should be using it!!
In Summary TRB Services

• A resource to the nation and to the transportation community worldwide
  – Opportunities for information exchange on current transportation research and practice
  – Management of cooperative research and other research programs
  – Analyses of national transportation policy issues and guidance on federal and other research programs
  – Publications and access to research information from around the world.

Who is attending the general TRB meeting

TRB Structured Transportation Research Programs, Agendas and Resources

TRB Annual Symposium

www.TRB.org

TRIS
Transportation Research Information Services (TRIS)

- Online Research Information
- TRB produces and maintains the Transportation Research Information Services (TRIS), the world’s largest and most comprehensive online bibliographic database of published and ongoing transportation research.
- Through a cooperative agreement with the Bureau of Transportation Statistics, the TRIS Database is available on the Internet through the website of the National Transportation Library. This service, TRIS Online, can be accessed through the TRB homepage at www.TRB.org. TRIS is also available through two fee-based services, Dialog and Silverplatter’s TRANSPORT CD-ROM.

Other TRB Online Resources

- Research in Progress (RiP) Database
- RiP provides access to more than 9,500 descriptions of current or recently completed transportation research projects from federal and state transportation agencies, universities, and international organizations
- The TRB Publications Index is a searchable index of the Board’s papers and reports.

Synthesis Program

- Reports on current knowledge and practice
- Synthesize fragmented, scattered, and unevaluated existing information
- Initiation of ~ 12 syntheses per year
- Selection process for synthesis topics:
  - widespread enough to generate broad interest
  - timely and critical for expediting delivery, improving the quality, or lowering the cost of transportation programs
  - current practice is non-uniform or inconsistent from agency to agency, or if the validity of some practices appears to be questionable
  - a need to organize and compress that which has already been learned and written on the topic
  - ongoing research or other activities in progress should not render the synthesis obsolete shortly after completion

National Cooperative Highway Research Program (NCHRP) Synthesis

- New NCHRP Synthesis topics submissions due February 17, 2012

Strategic Highway Research Program (SHRP 2)

- Congress established the second strategic highway research program (SHRP 2) in 2006 to investigate the underlying causes of highway crashes and congestion in a short-term program of focused research. Focus areas:
  - Safety: Significantly improve highway safety by understanding driving behavior in a study of unprecedented scale
  - Renewal: Develop design and construction methods that cause minimal disruption and produce long-lived facilities to renew the aging highway infrastructure
  - Reliability: Reduce congestion and improve travel time reliability through incident management, response, and mitigation
  - Capacity: Integrate mobility, economic, environmental, and community needs into the planning and design of new transportation capacity
Research Approaches

• Submission avenues:
  – Synthesis topic - NCHRP
  – SHARP 2 – Safety
  – Research questions/Problem statements

Sample Research Question

Title

The objective of this study is to examine candidate technologies that can be implemented to reduce front-end injury. In general, people have been slow to accept driver assistance technologies due to concerns about performance and performance variability. However, these concerns have diminished in recent years as driver assistance technologies have become more reliable. The nature of driver assistance technologies varies from providing an alert to the driver about a potential safety concern to fully autonomous systems to stop the vehicle. This study will encompass both types of technologies.

The objective is to increase the range of technologies available to drivers to support improvements in roadway safety.

Key Words

Technology, Driver Assistance, Front-End Injury

Related Work

Studies have been conducted that demonstrate the effectiveness of some technologies, but none are as comprehensive as this study.

There is a strong history on mitigating impact but not severity.

Implementing improvements should involve 100% of all vehicles included in fleet.
Who is here in this EMS Subcommittee meeting this year

TRB Ambulance Transport Safety Summit Conceptual Outline

- Systems Safety Engineering
- Transport safety, Fleet management
- Biomechanics, Ergonomics, Clinical care and Outcomes
- Patient, Provider and Public safety focus
- Low hanging fruit
- Transfer knowledge into practice
- Path forwards

Path Forwards

- Disseminate technical information
- Enhance understanding of technical transportation issues
- Facilitate sharing of information as standards are developed
- Interdisciplinary Collaboration
- Support the formulation of a transportation focused research agenda

Its out there NOW

- There have been two TRB Summits held, 2008, 2009 which addressed the key and interdisciplinary issues, and both with vehicle engineering and transportation systems technical expertise
- See [www.trb.org](http://www.trb.org), and for the Summit archives: [www.objectivesafety.net/TRBSummit2008.htm](http://www.objectivesafety.net/TRBSummit2008.htm) [www.objectivesafety.net/TRBSummit2009.htm](http://www.objectivesafety.net/TRBSummit2009.htm)
EMS Safety Systems, Strategies and Solutions Summit – February 29th 2012 – sign up now

http://www.cvent.com/d/zhq8tt

• Bridging the gap between what we do and what is known
• Enhancing ambulance transport safety through shared knowledge of technical data
• Open access, all EMS related organizations notified and invited, and beamed live also!

Ambulance Transport Safety Systems Strategies and Solutions Summit, February 29th 2012

• What metrics drive safety decision making
• What are the safety hazards this system faces
• How do we balance the system safety for the patient provider and public

Ambulance Transport Safety Systems Strategies and Solutions Summit, February 29th 2012

• How much should a medic lift
• What is a safe speed
• 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

Ambulance Transport Safety Systems Strategies and Solutions Summit, February 29th 2012

• What benchmarks in other industries are relevant to EMS
• What are the determinants of system safety
• What technologies enhance system safety performance
• How do we reach out to all personnel levels
• What strategies work best with reaching out to each generation

Ambulance Transport Safety Systems Strategies and Solutions Summit, February 29th 2012

• What are global best practice models
• Making it happen
• How can we translate global interdisciplinary best practice initiatives to North American EMS
Federal Highway Administration
FHWA Toward Zero Deaths

- The 4 E’s
- EMS role advancements
  - NEMSIS
  - Transport Safety
  - EMS Z.15
  - Enhancement of Trauma Systems

The National Cooperative Highway Research Program (NCHRP) 17-51

- Framework Project’s objective is to develop a Framework for the National Strategy on Highway Safety, for which there are 9 themes, EMS being one of them, and our input has been invited.
- The NCHRP 17-51 team are very grateful for input from the EMS community. Thanks to those from the EMS Safety Foundation who have shared their perspectives for them to date.

EMS and TZD

NCHRP 17 - 51

- The Framework developed by NCHRP 17-51 will be a tool that Stakeholders can use to formulate their Highway Safety Plans which integrate EMS, at the National, State, or Local Level. More information about the Framework Project is available at: http://www.strategicsafetyplan.com
Their EMS Webinar - July 29th, 2011

1) How different organizations (State EMS, Highway Administration, and DOT) inter-relate regarding EMS.
2) Opportunities for cooperative efforts and synergies with infrastructure, communications systems, vehicle design, and agencies.
3) Creating more awareness for EMS as one of the ‘Four E’s’
4) Key roles of the State EMS Office
5) EMS over the next 25 years

Their most NCHR 17-51 recent Webinars

- ‘Incident Management’, August 29th, 2011
- ‘State DOT Stakeholder Webinars’, August 29th & 31st, 2011
- ‘Data, Information Systems and Analysis Webinar 2’, August 31st, 2011
- ‘Public Health’, August 31st, 2011
- ‘Leadership and Performance Measurements’, September 1, 2011
- ‘Information and Knowledge Management’, September 1, 2011
- ‘Local Governments’, September 2, 2011

TZD EMS 2010 White paper

- There were a series of White Papers commissioned for the Towards Zero Deaths (TZD) road safety project to address visions for the future as the foundation for this NCHR project – one of which was on EMS. The document written under Federally funded contract in 2010, “White Paper No. 7 — Emergency Medical Services (EMS)”

NCHR 17-51 Handouts

- June EMS Handout
- July 297h EMS Handout

National EMS Assessment


NFPA Data Systems Analysis

Traffic Incident Management

Planned and coordinated multi-disciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM reduces the duration and impacts of traffic incidents and improves the safety of motorists, crash victims and emergency responders.

- Emergency Medical Services
- Fire and Rescue
- Law Enforcement
- Towing and Recovery
- Transportation
- Medical Examiners/Coroners
- Metropolitan Planning Organizations
- Public Emergency Access Points (911 centers)

The TIM Network

- Very similar to the EMS Safety Foundation
  - Gathering of practitioners from all locations and all TIM disciplines to collaborate, communicate, coordinate, and cooperate
  - Nearly 1,000 members from all disciplines
  - Free membership
  - Controlled communications
  - Monthly newsletter
  - Monthly webinars
  - Online membership directory
  - Job Postings – Coming Soon!

National Unified Goal for Traffic Incident Management

- 18 Cross-cutting strategies to support three overarching goals
  - Responder Safety
  - Safe Quick Clearance
  - Prompt, Reliable, Interoperable Incident Communications

- Basis for TIM Network activities
Where can I find the TIM Network?

- Look for Tim Shareswell
- On the web – www.timnetwork.org
- On Facebook – “Tim Shareswell” and “National Traffic Incident Management Coalition”
- Twitter – “The_TIM_Network”

https://svy.cfigroup.com/cgi-bin/qwebcorporate.dll?idx=77XW2B

EMS SAFETY COURSE
National Association of Emergency Medical Technicians
NAEMT EMS SAFETY COURSE

• **NAEMT Goal:** “to help reduce the number and intensity of injuries incurred by EMS practitioners in carrying out their work through a focused education program.”
• **Purpose of the Course:** “…to increase students’ awareness and understanding of EMS safety standards and practices, and develop their ability to effectively implement these practices when on duty.”

**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

**Course Modules**

- Introduction
- Crew Resource Management
- Emergency Vehicle Safety
- Scene Operations
- Patient Handling
- Provider, Patient & Bystander Safety
- Personal Health
- Conclusion

**Student Resource Guide**

- Supplemental information to program modules
- Articles, papers on EMS Safety
- Information and web-sites for EMS Safety organizations
- Sample safety policies and protocols

**Student Web Resource**

- Available via NAEMT web site
- More extensive references
- Manuals, SOP’s, longer articles & papers
- Updated continuously to include the latest information on EMS Safety
First-year Progress  
Course Rollout @ EMS Today, March 2011

- 11 State and National Courses conducted
- 155 Local & Regional courses held
- 943 EMS Practitioners trained
- 71 Instructors certified
- Active programs in 30 states

Upcoming International Programs

- SL Emergency Solutions, Tel Aviv, Israel
- Aruba National Registered Emergency Medical Technicians, Orangestad, Aruba

2012 Goals & Objectives

- Establish courses in remaining States
- Expand international program
- Begin revision process for 2013
- Continue as part of the EMS Culture of Safety Project
- Continued collaboration with the EMS Safety Foundation

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

Congratulations again to the 2010 Objective Safety Award Recipient

- Glenn Luedtke NREMT/P
- 50 Years in EMS/Public Safety
- Director, Sussex County EMS (retired)
- Chair NAEMT Safety Course
EMS Safety Foundation presentations

- APHA –
  - Implementation of a Sustainable Interdisciplinary Emergency Medical Services (EMS) Transport Safety Innovation and Knowledge Transfer e-platform
- Fleet Management presentation at the World Congress on Intelligent Transport Systems -
  - An Innovative Approach to Enhancing Driver Performance, Monitoring and Feedback with Cellular and Cloud Based Technologies

1980’s Then…
And NOW!…

The science of lifting & loading