Standards, Science, Reality and Where are We Headed?

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

You are the meat in the sandwich

EMS Safety Crisis
"The Chinese word for 'crisis' is made up of the words 'danger' and 'opportunity'"

Your electronic handout card

http://www.objectivesafety.net
Your Handout and Additional Resources
How do you use an eTag for the first time?

Get Microsoft Tag App on your smartphone (free from your App store, it reads ALL eTags)

1. open Tag App and scan the eTag
2. www.objectivesafety.net/PDFHO.htm form will open directly on your phone

The parachute – consensus or science driven??

With engineering questions
Sometimes it's best just to jump in

Based on technically sound scientific principles
And existing peer reviewed technical safety testing data
We HAVE compelling data

The Laws of Physics Prevail..

No ‘a’… then NO ‘F’ !!!!!

- F = ma

where F – force
m – mass
a – acceleration
Letter to Abe Lincoln – 1864 re: safety of ambulance design

Almost 150 years ago 1864 Ambulance Design Patent and Diagrams

USA 1980’s Then…. And NOW!...

USA 1980’s Then…. And 2012...

Equipment hard to reach

A survivable impact??
Innovation Now…

Science behind Policy

- “For successful technology, reality must take precedence over public relations, for Nature cannot be fooled.”
  Richard P. Feynman 1988

THIS IS OUR REALITY
In the USA there are more safety standards for moving cattle than for moving patients

Some new dimensions

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

Occupant protection is part of a system

Safe Systems Approach

Source: Road Safety Branch, Infrastructure and Surface Transport Policy, Department of Infrastructure, Transport, Regional Development and Local Government, Australia.
So what do we do now??
- What is best
- What is safest
- What is doable
- What risk are we taking
- What should we do
- What can we do

Today...
- Existing/potential standards for states use (ASTM, NFPA, KKK, CEN, ASA)
- Vision for an evolving role for SAE, TRB, etc.
- The “ten year” frame of mind

WE DO HAVE TECHNICAL DATA!!!

Ambulance Safety Research: No longer such a New Field

We should use the best safety practices demonstrated in engineering

ESV July 2009
Range of reach.. This is a well defined technical science

As well as epidemiological injury data
August, 2011

Who writes vehicle and occupant safety standards??
- FMVSS
- SAE
- CEN
- ASA
- ISO
- KKK – only ambulances
- AMD – only ambulances
- ASTM – only ambulances
- NFPA – for fire trucks and now ambulances
- Health Care providers – MARYN report

USA Ambulance Standards & Testing
- KKK A 1822F: Purchasing Guideline
  – “Minimum Specification and performance parameters”
- AMD-001-025: Manufacturing Guideline
- ASTM F2020-02a: Standard Practice
**Ambulance Standards and Testing**
- Interrelated – mostly paraphrasing each other’s requirements
- Self certified

**International Ambulance Design Safety and Occupant Protection Standards**
- In existence since 1999
  - Australia – ASA
  - Europe - CEN

**What we should be doing is comparing NFPA/KKK to the accepted international standard - CEN**

**Australia & New Zealand Ambulance restraint standard AS/NZS 4535:1999**
- Restraint systems only
  - "Restraint systems shall apply to all equipment and people carried in an ambulance…"
  - Dynamic Testing - 50th & 95th percentile manikins
  - 24G in Forward and Rearward
  - 10G in Transverse

- Medical vehicles and their equipment – Road ambulances
  - "Without exception, all persons, medical devices, equipment, and objects normally carried on the road ambulance shall be maintained to prevent them from becoming a projectile when subject to a force…"
  - Dynamic testing - 50th percentile manikins
  - 10 G in Forward, Rearward, Transverse, & Vertical directions
  - Certified by Notified Body & Ambulance Mfg

**ATSM- F2020**
- Standard Practice for Design, Construction, and Procurement of Emergency Medical Services Systems and Structures
USA KKK ambulance purchase specifications
to retire October 2013
- Specifications for purchase of Star of Life Ambulance
- Static Pull test
- 2200 Lbs. static stretcher test in longitudinal, lateral & vertical
- No dynamic test for vehicle, occupants or equipment
- No automotive test manikin
- Voluntary

USA Ambulance Manufacturing Division (AMD)
Ambulance Standards – August 2007
(being integrated into NFPA 1917)
- No dynamic or impact test
- No automotive test manikin
- Mandates NO ‘crumple zone’
- No impact tested anchorages for occupant or equipment
- Internal, not independent & not a standardizing body

AMD ambulance ‘safety testing’ ? – Is NOT consistent with accepted automotive safety practice...

AMD 2007 - 025 ‘static occupant safety testing’ - Compared with - Accepted automotive safety dynamic occupant testing

NFPA 1917, August 2012
(based on KKK, AMD)

NFPA 1917 - Test Methods
**NFPA 1917 Testing Criteria**

- AMD Standards incorporated
- Side load testing types I and III
- All adjustable seats must be dynamically tested to SAE J2917
- Seat belts for side facing seats tested to FMVSS 210

**SAE Ambulance Equipment mounting testing standards**

Frontal Impact SAE 2917, published May 2010
Side Impact SAE 2956, published June 2011

**Ten Year Frame of Mind**

- We cannot ignore the laws of physics
- We are getting better injury and event data – so we can no longer hide behind a shroud of lack of data
- Appropriate technical expertise in automotive safety biomechanics and occupant protection EXISTS and should be guiding decision making

This IS a Transportation and Automotive Safety issue
Interdisciplinary Innovation Consortium

The EMS Safety Foundation: A practical and functional model

Interdisciplinary and Operational and International

- Innovation
- Collaboration
- Knowledge transfer

Rettmobil 2012 – May 9-11th

EMS Safety Foundation Live @Rettmobil 2012

Click here http://www.youtube.com/watch?v=pR_jZ7ZUanI or scan the eTag below with your mobile device to see Live @Rettmobil 2012 Webinar on YouTube

What MUST we do?

- We MUST stop pretending that this is not an automotive safety occupant protection impact engineering issue
- We MUST stop writing ‘consensus’ policies on disciplines we are not trained in
- We MUST reach out to the technical experts in this field
- We MUST engage the existing technical and safety transport arenas with EMS transport

Click here http://www.youtube.com/watch?v=pR_jZ7ZUanI or scan the above eTag to see Webinar on YouTube
2012 EMS Safety Systems, Strategies and Solutions 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 than 10,000 downloads of handouts within the first week!

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

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

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
WE MUST BE COLLABORATIVE

- We must embrace the technical academic folks who have demonstrated technical data
- Isolating those who have done the independent technical work is harmful to EMS

Bottom Line

- So for right now – there are a number of standards and guidelines – and not all are equal – but USE ONE
- We MUST engage and involve the experts and existing transportation infrastructure evolving role for SAE, TRB, etc.
- The “ten year” frame of mind – we cannot continue to tolerate this situation, the data are already compelling that we are the most unsafe transport system on the road and well behind the safety of international vehicles – and substantial technical data exists ALREADY to tell us what to do

Oslo Norway mass shooting EMS response July 2011

Oak Creek, Wisconsin mass shooting EMS response July 2012

August 5th, 2012 - Mars

The Ostrich Syndrome?

We must do the right thing

- The cat is out of the bag –
R & D
“Ripoff and Duplicate”

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

- Innovation
- Collaboration
- Knowledge transfer

Thank you!
Any Questions??
Electronic handout and resources available online
http://www.objectivesafety.net