

# TECHNOLOGY TO ENHANCE SAFETY IN EMS

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*Disclaimer:*  
The presenter does not have a significant financial relationship to report.



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## Strategy for a National EMS Culture of Safety

- Commissioned by NHTSA at the Request of NEMSAC
  - awarded to ACEP
- 3 year project to produce a Strategy
- Consists of a Vision supported by the Strategy



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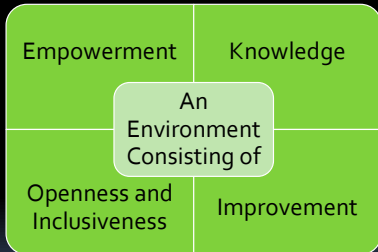
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## EMS Culture of Safety - Vision



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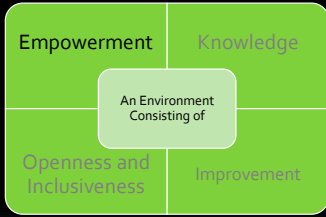
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### EMS Culture of Safety - Vision



- ❖ Speak up
- ❖ Unsafe practices
- ❖ Propose ideas for safer work
- ❖ Act in the interest of safety
  - Responder
  - Patient
  - Community




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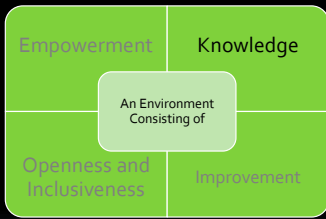
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### EMS Culture of Safety - Vision



- ❖ Informed Leaders
- ❖ Informed Caregivers
- ❖ Safety Education
- ❖ Gather and analyze safety data
- ❖ Caregiver and Patient Safety




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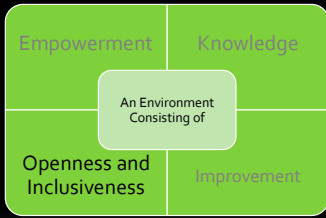
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### EMS Culture of Safety - Vision



- ❖ Openly admit mistakes
- ❖ Examine processes & environments leading to them
- ❖ National resources for support

*Punishing people for mistakes merely encourages them to hide unsafe behaviors and adverse outcomes*




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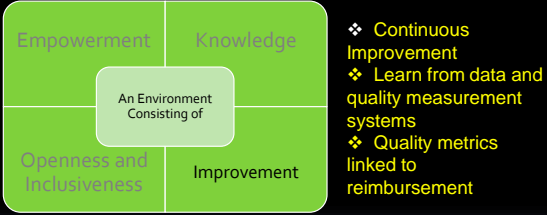
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### EMS Culture of Safety - Vision




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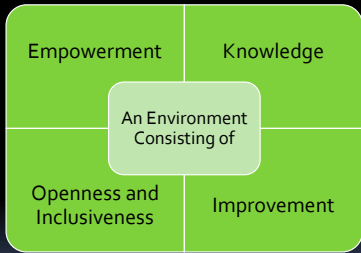
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### Substantial Cultural Change Takes Time




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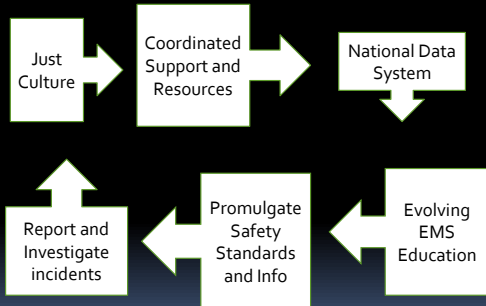
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### Strategy for a National EMS Culture of Safety




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People are encouraged/rewarded for reporting essential safety-related information

**Just Culture** →

- Duty to Act
  - Duty to follow procedural rule
  - Duty to avoid causing unjustifiable risk
- Human error – inadvertent act
- At-risk behavior – risk is insignificant or behavior justified
- Reckless Behavior – conscious disregard

Human error – Console  
 At-risk behavior – Coach  
 Reckless - Punish

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Resource and Coordination Center

**Coordinated Support and Resources** →

- EMS Safety Resource Center
- Unified safety message to all agencies
- Repository/library for tools, best practices, education, research
- Communication channel to EMS community
- Share research activities
- Create a list of "never events"
- Define EMS adverse event for reporting




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Strategy for a National EMS Culture of Safety

**National Data System** ↓

- Understand scope, frequency and nature of EMS adverse events
  - Caregiver, Patient, Community
  - Cost
- Nat'l EMS Responder and Patient Safety Data System
  - Robust/Well designed secure data system
  - data system linking and communicating with existing data systems
- Make data accessible and useful
  - Denominator data – hours worked, call volume, mileage




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No consensus in Mgmt level/titles and competencies needed to fulfill those levels

- EMS Education (initial & CE)
- Educate Leaders and Caregivers
- Actively ID candidates at-risk for unsafe behavior
- Transition from NEOP to FTO to Field
- Integrate Safety into every component of EMS education

Evolving EMS Education




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Strategy for a National EMS Culture of Safety

- Promote Safety related standards
- Evidence based – literature, data, consensus
- EMSSRC will coordinate and distribute past and future work of EMS agencies
- Collaborate to develop priority list
  - Physical Fitness
  - Shifts/Fatigue
  - MVR and other background checks
  - Combative patients
  - Patient moving equipment

Promulgate Safety Standards and Info




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Strategy for a National EMS Culture of Safety

- ❖ Acknowledges importance of mandates for reporting of standardized data by all EMS agencies
- ❖ EMSSRC would partner in the development of a mechanism for reporting/investigation
- ❖ Data – necessary, useful, currently available
- ❖ Provide to an investigative body – NTSB?

Report and Investigate incidents




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### General Issues with Ambulance Safety Design

<p><b>Ambulance</b></p> <ul style="list-style-type: none"> <li>Size</li> <li>Stability</li> <li>Systems</li> <li>Energy</li> <li>Efficiency</li> <li>Conspicuity</li> <li>Useful Life</li> </ul>	<p><b>Cab</b></p> <ul style="list-style-type: none"> <li>Restraints</li> <li>Air Bags</li> <li>Distractions</li> <li>Teamwork</li> <li>Protrusions</li> <li>Technology</li> <li>Equipment</li> </ul>	<p><b>Patient Compartment</b></p> <ul style="list-style-type: none"> <li>Occupant Safety</li> <li>Patient Safety</li> <li>Ergonomics</li> <li>Patient Care</li> <li>Storage</li> <li>Protrusions</li> </ul>
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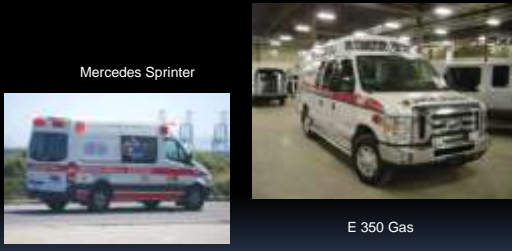
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### 2010 EPA Emission Standards – Diesel Exhaust Fluid




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### Type 2 Chassis in the next few years




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### Conspicuity




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### Conspicuity

Which one is the easiest to see?




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### Conspicuity

Size, Direction, Movement




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### Patient Loading Systems



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### Patient Loading Systems



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### Telescoping Arms and Tilting Mechanism



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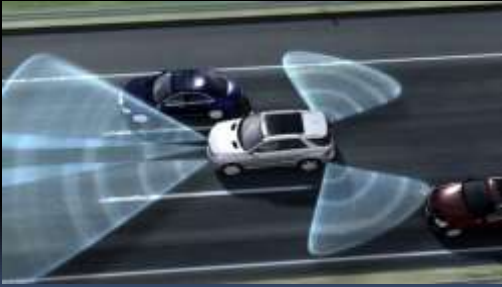
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### Distronic Plus with Pre-Braking



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### Attention Assist



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### DOT - Dedicated Short Range Communications

Intelligent Transportation Systems  
Joint Program Office



- Blind spot warnings
- Forward collision warnings
- Sudden braking ahead warnings
- Do not pass warnings
- Intersection collision avoidance and movement assistance
- Approaching emergency vehicle warning
- Vehicle safety inspection
- Transit or emergency vehicle signal priority (Opticom)
- Electronic parking and toll payments
- Commercial vehicle clearance and safety inspections
- In-vehicle signing
- Rollover warning
- Traffic and travel condition data to improve traveler information and maintenance services



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1- 800 How's My Driving?



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Thanks for Attending



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