A Safe System Approach and the Road to Zero
Introductions

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  - 3rd party evaluator of all Georgia GOHS’s external grantees

- Crystal Shelnutt, MPH, NRP
  - EMS Educator specializing in pre-hospital trauma care
  - Regional Trauma Advisory Council (RTAC) Coordinator
  - Chair of the Georgia EMS Education Consortium
Learning Objectives

- Understand how the 6 Safe System principles and the 5 Safe System elements aim to eliminate all fatal and serious injuries for all road users, including those in rural communities.

- Explain how the United States can reach zero roadway fatalities by 2050.

- Understand what advancements and limitations Emergency Medical Services (EMS) has in supporting the Road to Zero.
Safe System Approach

A paradigm shift from conventional roadway safety approaches.
The Safe System Approach aims to eliminate all fatal and serious injuries for all road users.

It does so through a holistic view of the road system that first anticipates human mistakes and second keeps impact energy on the human body at tolerable levels.
The Safe System Approach represents a paradigm shift from conventional safety approaches in three main ways.

1) Rather than focusing on preventing human error, it instead accommodates human error.
2) The Safe System Approach is characterized by shared responsibility.
3) Whereas conventional safety methods are primarily retrospective, the Safe System Approach is prospective.
The 6 Safe System Principles

THE 6 SAFE SYSTEM PRINCIPLES

- DEATH/SERIOUS INJURY IS UNACCEPTABLE
- HUMANS MAKE MISTAKES
- HUMANS ARE VULNERABLE
- SAFE ROADS
- SAFE SPEEDS
- Post-Crash Care
- Safe Road Users
- Safe Vehicles
- REDUNDANCY IS CRUCIAL
- SAFETY IS PROACTIVE
- RESPONSIBILITY IS SHARED

Source: FHWA
The 5 Safe System Elements

These layers of protection and shared responsibility promote a holistic approach to safety across the entire transportation system.
1. **Safe Road Users:**
   - Addressing the safety of people who walk, bike, drive, ride transit, and travel on roads.

2. **Safe Vehicles:**
   - Designing vehicles to minimize the occurrence and severity of collisions with the latest technology and safety features.

3. **Safe Speeds:**
   - Using speeds that limit impact forces, provides additional time for drivers to stop, and improves visibility.

4. **Safe Roads:**
   - Designing roads to accommodate human mistakes.

5. **Post-Crash Care:**
   - Ensuring available and properly trained emergency responders to locate, stabilize, and transport for further treatment.
The Road to Zero

A vision for achieving zero roadway deaths by 2050.
Who is dying on America’s roadways?

1. **Young People**
   - Crashes are the leading cause of death for people ages 15 to 24.
   - Crash risks for teen drivers are higher than any other age group.

2. **Men**
   - 71% of people killed in all crashes are men.
   - By crash type, the percentage of fatalities that are men ranges from 49% of passenger car deaths to 99% of large truck deaths.

3. **Rural Road Users**
   - Rural roads are more dangerous than urban ones; for the same number of miles driven, more than twice as many people die in rural areas.
The Road to Zero (RTZ) Coalition was established in 2016 and outlines 3 interrelated approaches for reaching zero roadway fatalities by 2050.

1. Double Down on What Works
   • The United States has both an accumulated body of evidence-based countermeasures and a well-established network of experts who can deploy them.
     • Engage political leaders and decisionmakers about policy.
     • Identify new or shared resources for research, roadway design and construction, vehicle engineering, law enforcement, consumer education, and trauma care.

2. Accelerate Advanced Technology
   • Employ automatic emergency braking, adaptive cruise control, lane-keeping technologies, etc..

3. Prioritize Safety
   • Create a safety culture and adopt a Safe System Approach.
   • Raise awareness, educate, and constantly reinforce.
Three Approaches Working Together to Reduce Roadway Deaths to Zero

1. Double down on what works
2. Accelerate advanced technology
3. Prioritize safety

- Technology performance standards adopted
- First fully automated vehicles deployed
- City Vision Zero strategies spread
- National trauma triage criteria in widespread use
- Data standards adopted
- Early integration of Safe System approach
- ADAS on majority of vehicles
- Vehicles able to communicate with 911 dispatchers
- Widespread use of automated enforcement
- Public support for new safety programs increases
- Insurance markets nudge bad drivers to safer vehicles
- Deployment of advanced vehicle technologies expands
- “Safety in all policies” approach spreads

37,000+ deaths

TODAY  2025  2030  2035  2040  2045  2050

Traffic deaths

NOTE: TZD = Toward Zero Deaths.

RAND RR2333-S.3
Who can start taking action now?

Federal Officials
- Use incentives and standards to accelerate effective safety technology in the market.
- Support efforts to achieve safety goals in rural areas with adequate funding.

State and Local Officials
- Enact and provide adequate resources for the enforcement of strong traffic safety laws.
- Work with business to identify priority safety needs, support new policies, and align resources.

Auto Manufacturers and Technology Developers
- Work with stakeholders to identify priority safety needs and accelerate widespread adoption of the most-promising life-saving technologies as quickly as possible.

Safety Researchers and Advocates
- Educate consumers about the far-reaching effects of traffic crashes, injuries, and deaths, and about the potential for change.
Business Community and Fleet Owners

- Work with local and state governments to utilize the full range of data sources to identify regional safety problems, select solutions, and create change.

Insurance Companies

- Participate in forums about data sharing and protecting consumer privacy.
- Educate consumers about the need for improved safety laws and programs, as well as the benefits of advanced safety technologies.

Law Enforcement and Judicial System

- Enhance enforcement of existing and new safety laws.

Emergency Medicine and Trauma Academics, Practitioners, and Advocates

- Work with local and state governments to prioritize trauma system investments and improve trauma care.
- Prioritize investment in trauma system needs and identify methods with greatest return on investment, especially for rural areas.
In summary...

• The Safe System Approach aims to eliminate all fatal and serious injuries for all road users (motorists, bicyclists, pedestrians).

• The Safe System Approach represents a paradigm shift from conventional safety approaches by accommodating for human error, sharing responsibility, and planning prospectively.

• The Safe System Approach is the method in which the United States will reach zero roadway fatalities by the year 2050.

• The Road to Zero is possible by doubling down on what we know works, accelerating advanced technology, and prioritizing safety.
Early Investments in Trauma Care

EMS evolves to increase access to life saving trauma care
Current Improvements in Trauma Care

• Specialized EMS Training: Farm Medic, TECC, Crash Vehicle Extrication
• Stop the Bleed training and kits
  • Life Saving Interventions for point of injury care
Pre-hospital Administration of Blood Products

Select EMS services now carry Fresh Frozen Plasma (FFP) and/or Whole Blood

Decreasing time to transfusion increases survivability following critical injuries

'Normal Saline' can contribute to the Trauma Triad of Death (hypothermia, acidosis, coagulopathy)
<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm Medic</td>
<td>EMS providers receive training on specific agricultural equipment found in their area</td>
</tr>
<tr>
<td>Crash Vehicle Extrication</td>
<td>Medics practice managing a critical patient requiring complex extrication</td>
</tr>
<tr>
<td>Tactical Emergency Casualty Care</td>
<td>Medics are trained in the basics of entering an active threat environment and treating the wounded.</td>
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These courses are funded by the Georgia Trauma Commission.
Barriers to Improvements in EMS and Post-Crash Care
Hospitals and nursing homes frustrated by ambulance staffing shortage

U.S. Ambulance Companies Sound Alarm on Workers in Short Supply

Ambulance, EMT first responders face ‘crippling workforce shortage’

COVID-19 takes EMS worker shortage to ‘crisis level’: American ambulance association president

The Pandemic Exacerbates the ‘Paramedic Paradox’ in Rural America
Factors contributing to EMS retention and recruitment

Medics are:
- 3x more likely to be injured
- 10x more likely to have suicidal ideations or attempts
- 30x more likely to be assaulted on the job
- Compensated 40% less than the average-employed American
Training and scope of practice for EMS providers

Post-Crash care depends on the skill and experience of the provider
Barriers to Improvements in EMS and Post-Crash Care

In 39 states EMS is not considered an essential service like law enforcement and fire departments.

Inconsistency in EMS service models is challenging for advocacy (Hospital based, Private services, combined fire service, or County based). In the US there are more than 19,000 separate EMS organizations.

Are we healthcare or public safety? If EMS is healthcare, perhaps we need to evaluate being housed under DOT. If EMS is public safety, then services should be more standardized with federal funding and a single oversight administration.
Resources

EMS.gov
https://www.ems.gov/

Georgia Trauma Commission
https://trauma.georgia.gov/

National Center for Rural Road Safety
https://ruralsafetycenter.org/

National Safety Council (NSC)
https://www.nsc.org/road/resources/road-to-zero/events-archive

U.S. Department of Transportation
https://www.transportation.gov/NRSS/SafeSystem
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