

PLAINS TO PEAKS TRAUMA CONFERENCE 2026

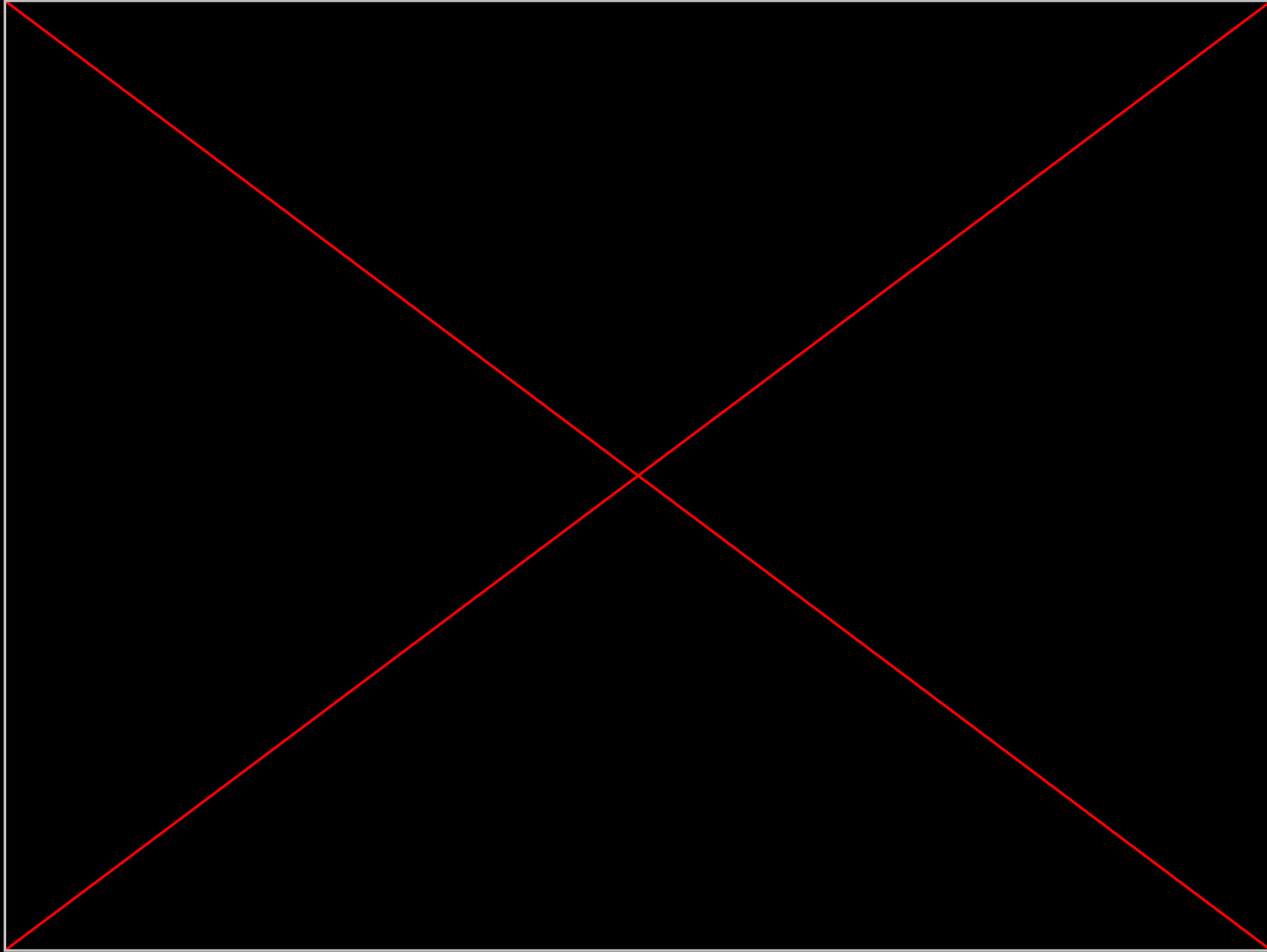
The Only Ambulance In the Storm

Rural EMS Challenges in
Eastern Colorado

Eastern Colorado EMS Operations



What People think rural EMS looks like....



Setting the Scene

Eastern Colorado Plains



 Elbert County

4,678 sq mi

 Lincoln County

2,586 sq mi

 Kit Carson County

2,162 sq mi

Three counties. Nearly 10,000 square miles of open prairie.

Who We Are

Eastern Plains EMS Profile



Volunteer-Run

Mostly volunteer departments covering enormous service areas with minimal staffing.



High Medical, Low Fire

70–90%

EMS calls make up 70–90% of total call volume for rural volunteer departments.



90+ Min to Trauma Care

90+ min

Ground transport to a Level I/II trauma center in Denver exceeds 90 minutes one-way.

The Geography Problem

When Miles Are the Enemy



"A single long-distance transport to Denver removes one ambulance and crew for 3–4 hours."

- Treeless short-grass plains – no natural barriers against weather
- Remote farms often accessed only by unmarked dirt roads
- Low population density = thin resource coverage across vast area
- Incidents occur far from established towns with no bystander support

The Weather Factor

Plains Extremes



Blizzards & Whiteouts

Roads become impassable. Zero visibility. Crews face life-threatening conditions on open flat plains.



Tornadoes & Severe Storms

Multiple tornadoes near Elbert County in May 2025. Mass casualty potential on open unprotected plains.



Dust Storms (Haboobs)

Zero-visibility walls of dust strike with little warning, creating sudden dangerous driving conditions on I-70.



Extreme Heat

Blistering summer temperatures increase heat casualties among agricultural workers in open fields.

Blizzards and Whiteouts

When the World Disappears

"Roads don't just become dangerous. They disappear."

- ⚠ Heavy snow drifts block all road access to remote farms and ranches
- ⚠ Communication outages as power lines go down across the flat plains
- ⚠ Crew safety at extreme risk in sub-zero temperatures and 45+ mph winds
- ⚠ Air medical grounded – you are the only option for the entire region

Tornadoes and Severe Storms

The Rotating Threat



May 2025 — Multiple tornadoes touched down near Elbert County, Eastern Colorado

EMS Challenges During Tornado Events

- ⚠️ Scene safety: no shelter on open, exposed plains
- ⚠️ Multiple simultaneous casualty sites spread across vast area
- ⚠️ Power outages disrupt dispatch and communications networks
- ⚠️ Single agency overwhelmed — MCI with minimal resources

Dust Storms and Extreme Heat

Hidden Killers



Dust Storms (Haboobs)

- > Strike with little warning on open treeless plains
- > Instant near-zero visibility – I-70 crash risk surges dramatically
- > Wildfire smoke compounds poor air quality for both patients and crew
- > AQI spikes to unhealthy levels, affecting respiratory patients



Extreme Heat

- > Farmworkers and ranchers exposed in open fields throughout the day
- > Heat stroke and heat exhaustion calls spike significantly each summer
- > Equipment and vehicles stressed by extreme heat in full sun
- > Crew heat burden in full PPE during summer calls is significant

I-70 Eastern Plains

America's Lonely Highway



75 vehicles

April 2026 I-70 Pileup — 19 Injuries

Caused by heavy snow and high winds on flat plains stretch

When I-70 Gets Hit

- All local EMS resources tied up for hours
- Vast surrounding area left without coverage
- Frequent full closures isolate communities for days
- Eastbound closure from E-470 all the way to Kansas border

The Volunteer Crisis

Who Answers the Call?



Shrinking Pool

Declining, aging rural population. Economic need for paid employment decimates volunteerism across the Eastern Plains.



Financial Strain

High fixed costs. Low call volumes. Inadequate reimbursement. Thin local tax base leaves agencies chronically underfunded.



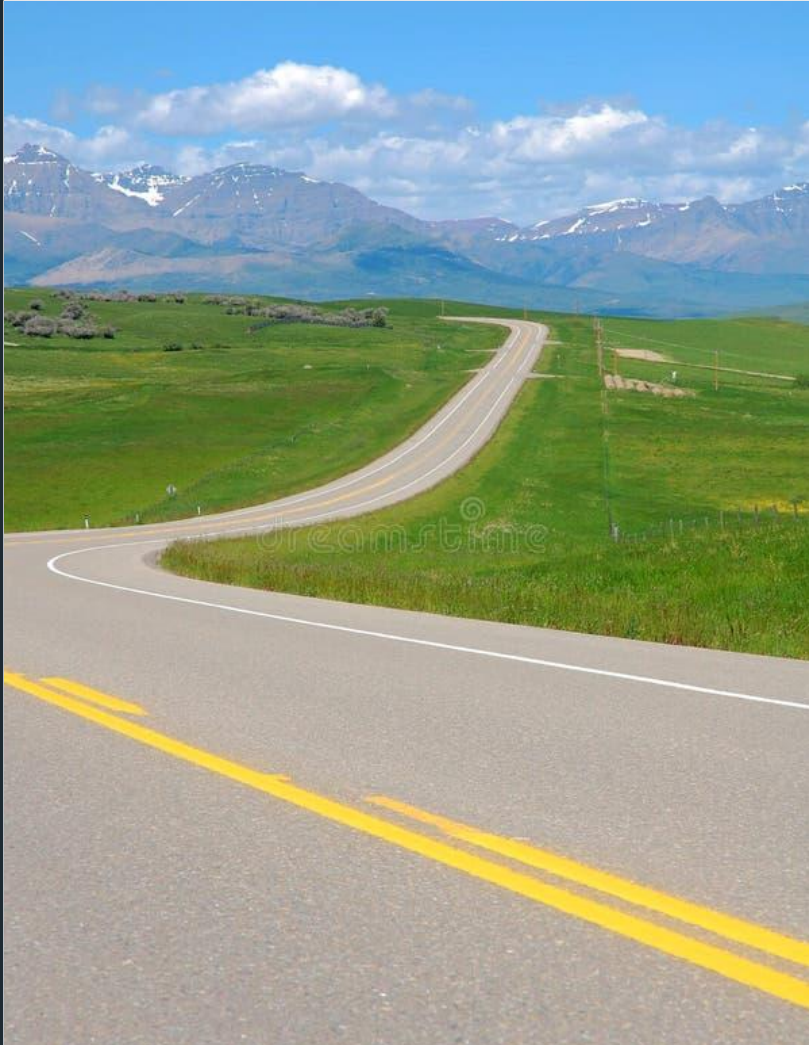
Operational Burnout

70–90%

of rural department calls are EMS. Long transports plus training demands burn out dedicated volunteers.

Agricultural Trauma

The Hidden Epidemic



820 acres average Colorado farm size – incidents happen far from roads and help

! Livestock Handling Injuries

Cattle injuries are among the most severe agricultural traumas in Colorado. Crush injuries, kicks, and goring events produce high-energy trauma with significant internal injury. Scene access is often via muddy ranch roads with no address markers.

🔧 Machinery and Vehicle Trauma

Tractor overturns are a leading cause of fatalities. ATV and side-by-side incidents. Entrapments in combines and harvesters – miles from paved roads, with no cell signal.

When the Air Is Not an Option

No Flight in the Storm

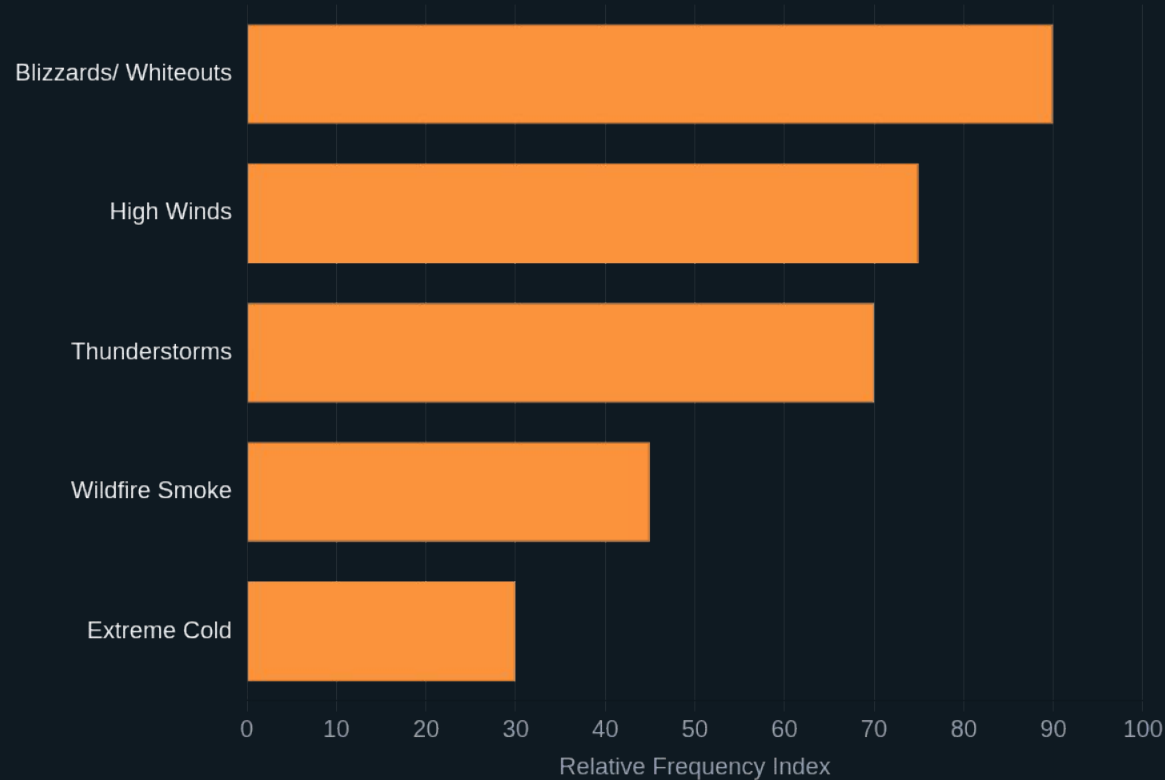


"The same storm that creates the patient also grounds the helicopter."

- ✗ Blizzards and high winds: helicopters grounded
- ✗ Whiteout conditions: zero VFR capability
- ✗ Wildfire smoke: unsafe AQI for flight crews
- ✗ Extreme cold: aircraft performance degraded
- ✗ Thunderstorms and tornadoes: no-fly conditions

Weather Events That Ground Air Medical

Relative Frequency on Eastern Plains



Illustrative relative frequency based on regional weather patterns

Blizzard on I-70 Near Limon

Lincoln County, Eastern Colorado


03:00. February blizzard. I-70 near Limon.

Multi-vehicle pileup. 6 patients reported. Unknown number of semis involved.






 Visibility: near zero

 Roads: drifted shut east of Limon

 Temp: 8°F, wind 45 mph

 Air medical: **GROUNDED**

What You Face





-  **One ambulance.** Potentially 6+ critical patients.
-  Nearest mutual aid: **20-25 miles away** in whiteout conditions
-  Transport to Hugo (**20 min**) – Level IV capability
-  Transport to Level II Denver: **2+ hours** in storm conditions
-  Your unit is **ALL coverage** for the entire region

ATV Farm Accident Near Limon






Lincoln County, Eastern Colorado

14:30. July. 7 miles north of Limon. No cell signal.

High speed impact into barbed wire. Severe neck trauma. 90-minute delay to notification.

-  Scene access: dirt field road, GPS unreliable
-  Temperature: 97°F, full sun exposure
-  Patient: massive trauma, shock on arrival
-  Air medical: available but 35-min ETA

The Clock Is Already Running

-  **90-minute pre-notification delay** = patient in shock on arrival
-  Ground EMS response: **20 min** to scene after dispatch
-  Extrication: **40+ min** with rural fire mutual aid
-  Fly or drive? Weigh helicopter ETA vs. direct ground transport
-  Nearest trauma center: Denver — **2 hours** by ground

Ambulance Involved in Crash Outside Limon

Lincoln County, Eastern Colorado

13:30. Oct 22 Ambulance Involved in Crash Outside Limon

A front-tire blowout sent the ambulance into a ditch and through a fence,

 Scene access: Through ditch from main road


Patient: Patient was involved in a semi rollover with head trauma, then later involved in an ambulance wreck during transport.


Air medical: available but 35-min ETA

Temperature: 78°F, full sun exposure

The Clock Is Already Running

 **Notification delay** = No radio communication. Dead area.

 Ground EMS response: **40 min** to scene after dispatch
Extrication: **None needed.**

 **Primary ambulance on another call. This was Limon's second out ambulance**

 Fly or drive? Weigh helicopter ETA vs. direct ground transport

 Nearest trauma center: Denver — **2 hours** by ground



Decision Making Under Isolation

When You Are the System



Transport

- Fly or drive?
- Treat and transport vs. stabilize on scene?
- Which facility matches this patient's needs?



Resources

- What mutual aid can arrive, and when?
- Can you manage multiple patients alone?
- What skills do you have available right now?



Communication

- Do you have reliable contact with medical direction?
- Can dispatch reach mutual aid agencies?
- Is your location known and accessible?

Communication Challenges

On the Plains

Radio Dead Zones

The flat terrain of the Eastern Plains creates unexpected radio gaps. Remote farms and fields may have no cell or radio coverage – leaving crews completely isolated during critical incidents.

Storm-Caused Outages

Severe weather – blizzards, tornadoes, high winds – knocks out power lines across the plains, disrupting dispatch centers, repeater towers, and communication networks simultaneously.



Resource Scarcity

Making Do With What You Have



Personnel

Often 2-person crews covering massive service areas across multiple counties.

Adaptation: Cross-training for maximum individual capability and scope



Equipment

Limited advanced interventions. No prehospital blood transfusions in most agencies. Aging units.

Adaptation: Aggressive hemorrhage control and rapid packaging for transport



Facilities

Rural hospital closures removed critical stabilization points across the plains region.

Adaptation: Know your transport options and facility capabilities cold

Mental Health and Provider Resilience

You Cannot Pour from an Empty Cup



"Small teams. High acuity. Long transports. No backup. The burden is real."

Peer Support

Build formal peer support networks within your agency and region.

Debriefing

Structured after-action debriefs after high-acuity or traumatic calls.

Recognizing Burnout

Monitor team fatigue, especially in small departments with heavy EMS call loads.

Access Resources

Know EMS-specific mental health resources and crisis lines before you need them.

Mutual Aid on the Prairie

Building Your Network

Tiered Response Model

Tier 1 Local Agency

First unit on scene – Agate, Lincoln Health, and Hugo Fire



Tier 2 County Mutual Aid

Adjacent county EMS activated simultaneously for high-acuity calls



Tier 3 State Resources

Colorado SEOC, National Guard medical assets for MCI or declared disasters



Tier 4 Air Medical

When weather permits – AirLife Colorado or other regional providers

Build It Before You Need It

- ✓ Know your neighbors by name, not just agency
- ✓ Pre-plan coverage gaps during weather events
- ✓ Maintain updated mutual aid contacts at all times
- ✓ Train together, not just separately

Technology Solutions

For Plains EMS



Satellite Communication

Starlink and satellite phones bypass dead zones — reliable contact in the most remote fields and ranches.



Advanced GPS and Mapping

Offline maps and rural address GPS systems locate farms and dirt-road scenes accurately without cell signal.



Telemedicine / Medical Direction

Real-time physician oversight via video for complex clinical decisions during 90-minute ground transports.



ePCR and Data Systems

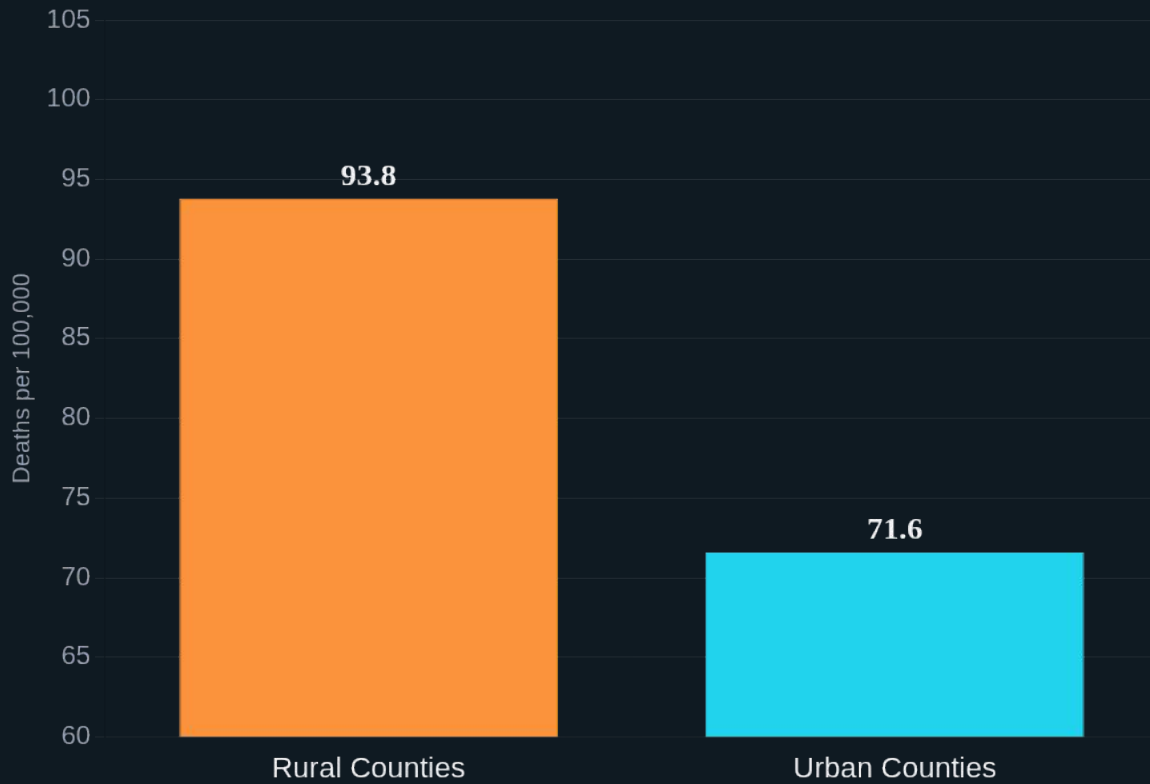
Digital patient records improve quality improvement and identify patterns in rural trauma across the plains region.

The Path Forward

Advocacy and Change

Trauma Mortality Rate: Rural vs. Urban Colorado

Deaths per 100,000 people



Source: Colorado trauma mortality data

What We Must Fight For

- \$ Sustainable rural EMS funding models
- 🎓 Training and skills maintenance support
- 📶 Communication infrastructure investment
- ❤️ Rural trauma center network expansion
- 👤 EMS recruitment and retention programs

The Promise We Keep

When the storm hits, the roads close, the helicopter is grounded, and the radio drops tones —

you still go.

That is the promise of Eastern Colorado EMS.

30–64%

Higher injury odds, rural
vs. urban Colorado

93.8

Trauma deaths per 100K
in rural counties

90+ min

To definitive
trauma care

Thank You | Plains to Peaks Trauma Conference 2026