Boots on the Ground vs The Eye in the Sky

An EMS perspective on RMOCC design, operations, and patient-centered performance

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The Core Question

CLINICAL FRAMING

- Coordination is valuable in complex systems.
- Prehospital care is time-critical and uncertainty-rich.

THE CENTRAL QUESTION

Does added coordination improve outcomes or delay time-sensitive care?

- **MacKenzie et al. (2006):** Patients treated at designated trauma centers had 25% lower mortality — regionalized systems save lives when coordination happens at the system level.
- **Alruqi et al. (2023):** MCI prehospital times were 2.5× longer than standard responses — delays driven by adverse triage decisions and communication breakdowns, not casualty volume.

Eye vs Boots: Two Valid Perspectives

Eye in the Sky (RMOCC)

- System-wide situational awareness
- Resource allocation and load balancing
- Consistency and standardization
- Risk mitigation for system collapse

VS

Boots on the Ground (EMS)

- Real-time clinical decisions
- Local intelligence and scene dynamics
- Time-sensitive transport and stabilization
- Accountability at point of care

Time vs Coordination

WHY SECONDS MATTER

- Trauma and critical illness are time-dependent.
- Each added communication or approval step can introduce delay.
- Operational complexity increases cognitive load and error risk.

CLINICAL IMPLICATION

Coordination should not be placed in the most time-sensitive portion of the care pathway.

- Every 1-minute increase in scene time = 1% increase in mortality (penetrating)
- Every 1-minute increase in response time = 2% increase in mortality.

Information Gap: Dashboard vs Scene

Centralized Data Systems

- Aggregated and delayed metrics
- Dependent on reporting cadence
- Strong for planning and resource visibility

Field Reality

- Immediate scene intelligence
- Dynamic hazards and route disruptions
- Rapid physiologic change

The Information Black Hole

Self-Transport, Triage Data Gaps, and Final Designation

Self-Transport to ERs

- Significant numbers of MCI victims bypass EMS
- Waukesha: 83 injured — only 26 by EMS; 52 by private car or law enforcement
- Patients arrive untriaged, without prehospital notification
- Hospitals receive surge with zero advance warning

START / SMART Triage Gaps

- Designed for speed: 30–60 seconds per patient
- Captures color category and basic vitals only
- Undertriage 2–8%; overtriage up to 50%
- Limited field data often does not reach hospital intact

Final Facility Designation

- Definitive transport decision happens at hospital, not field
- Waukesha: secondary triage in CT hallway
- Real-time reads drove OR vs. transfer vs. re-evaluate
- Field triage categories did not match hospital presentation

BOTTOM LINE

The RMOCC cannot optimize what it cannot see. Self-transport, triage data gaps, and hospital-level re-triage all limit centralized visibility.

Connecticut Context: Fragmentation by Design

169

municipalities

- Mixed EMS delivery models across municipal, volunteer, and commercial providers
- Distributed governance — no single authority over prehospital care delivery

100+

PSAPs

- Protocols, integration, and situational awareness differ across dispatch centers
- System variability begins at the very first point of contact

OPERATIONAL IMPLICATION

Centralized command assumptions do not map cleanly onto CT's decentralized infrastructure. Before adding another coordination layer, align and simplify the existing front-end intake ecosystem.

Communication Layer: CMED

OPERATIONAL REALITY

- CMED provides a structured EMS-to-hospital communication framework.
- Adding RMOCC on top can create stacked coordination rather than streamlined flow.
- In high-acuity situations, communication should reduce—not add—steps.

CLINICAL GUARDRAIL

Default to rapid transport to the closest appropriate facility; coordinate transfers after stabilization.

Current Model: Layered Coordination

911/PSAP ▶ **EMS** ▶ **CMED** ▶ **Hospital** ▶ **RMOCC**

OPERATIONAL CONCERN

- Sequential coordination can create cumulative delay.
- Multiple handoffs increase communication risk.
- In time-critical cases, this can compete with clinical priorities.

Risk Summary: Human Factors in High-Risk, Low-Frequency Events

Delay in time-critical transport decisions (Golden Hour)

Reduced EMS autonomy and increased cognitive load

Mission creep: disaster tools applied to routine operations

Ambiguity in accountability and liability when transport is extended

HUMAN PERFORMANCE UNDER STRESS

- Klein's RPD model: experts rely on pattern recognition — MCIs deny them familiar patterns
- Average firefighter experiences 9 traumatic events/year vs. 3 in a lifetime for the general public
- 7–37% of first responders meet criteria for PTSD; 20% of paramedics over a career

- Stress degrades working memory, narrowing attention and increasing error rates
- Low-frequency events eliminate the experience base that enables expert decision-making
- Cognitive overload from stacked coordination layers compounds field-level performance risk

The Prehospital Provider Mindset: MCI Scene Reality

THE FUNDAMENTAL SHIFT

Sort patients — don’t treat them.

This contradicts everything a provider is trained to do.

COGNITIVE REALITY ON SCENE

- Simultaneous scene safety, triage, treatment, transport, and communication demands
- Golden Hour applies to every patient at once not just one
- Decision fatigue under chaos, noise, and limited information
- Dynamic threats: ongoing hazards, secondary events, bystander interference
- Ethical tension between individual advocacy and population-based care

KEY INSIGHT

The prehospital provider operates with incomplete information, under extreme time pressure, in an environment designed for speed not data capture. Any coordination layer must respect this reality.

Three-Layer Model: Detailed Framework

Field (EMS)

- SPEED: Transport to closest appropriate facility with no bypass delays
- AUTONOMY: Provider makes transport decision using scene intelligence and local knowledge
- SIMPLICITY: Minimize radio steps and coordination layers during time-critical phase

Hospital

- STABILIZE: EMTALA screening, resuscitation, damage control surgery
- DIAGNOSE: CT imaging, labs, and clinical assessment to define injury burden
- RISK STRATIFY: Secondary triage - OR now vs. transfer vs. re-evaluate (Waukesha model)

System

- TRANSFER: Interfacility transport using health system critical care assets
- LOAD BALANCE: Distribute patients based on real-time capacity and census
- SPECIALTY MATCH: Route to definitive care; Level I, pediatric, burn, neurosurgical

KEY PRINCIPLE

Each layer has a distinct function. Mixing layers such as inserting system-level coordination into the field phase creates delay without adding clinical value.

Operationalizing: ICS, HICS, and System Coordination

ICS (Field)

- NIMS-based field command
- Managed by fire/EMS IC
- Controls scene operations, triage, transport
- Focused on speed and resource deployment

HICS (Hospital)

- Hospital-adapted incident command
- Managed by hospital administrator or designee
- Controls surge capacity, staffing, supply chain
- Focused on internal operations and patient flow

BRIDGING THE GAP

- ICS and HICS operate in parallel often without shared situational awareness
- Hospital Area Command (HAC): chief officer deployed TO hospitals (SOP SNFO-14)
- Waukesha: direct phone line between WMH ED and Children's Wisconsin
- System coordination belongs in the post-stabilization phase

BOTTOM LINE

Decentralized intake + centralized post-stabilization optimization preserves patient safety and system resilience.

Proposed Model: Stabilize First, Optimize Second

EMS → Closest Appropriate Facility → Stabilize → System Transfer / Load Balance

DESIGN PRINCIPLE

- Preserve rapid access and early stabilization.
- Move system optimization to the post-stabilization phase.
- Use existing health system transport mechanisms for definitive placement.

Solutions: Making Transport Decisions at the ED

Lessons from Waukesha and the Hospital Area Command Model

WAUKESHA PARADE INCIDENT

(Browne et al., NAEMSP 2024)

- Secondary triage in CT hallway real-time reads drove OR vs. transfer decisions
- Direct phone line between WMH ED and Children's Wisconsin enabled prioritized transfers
- Whiteboard central command at ambulance entrance physician + registrar tracked all patients
- 11 critically ill pediatric patients in 13 min with 10 of 11 with major head/facial injuries
- Result: 17 patients at Children's, 9 Level 1 traumas, 10 to ICU, 8 to OR zero preventable deaths

HOSPITAL AREA COMMAND (HAC)

(Southern Nevada SOP SNFO-14)

- Battalion chief deployed AWAY from scene to establish Hospital Area Command
- Engine/truck companies sent to closest 2 hospitals + trauma center for C.A.N. reports
- C.A.N. = Conditions, Actions, Needs real-time hospital status fed back to IC
- Triggers: Level 3 MCI (>25 patients), hospital request, or any chief officer request
- Crew expectations: meet charge nurse, gather intel, provide triage/treatment, assist transport

THE TAKEAWAY

Transport decisions don't have to be made in the field. Stabilize first, then use hospital-based secondary triage and system-level coordination to route patients to definitive care.

Where Do We Go From Here?

Key Solutions for a CT-Appropriate Model

1. **Preserve field-level autonomy —** transport to the closest appropriate facility without centralized routing or bypass delays
2. **Adopt the three-layer model —** keep prehospital fast and simple, stabilize at the hospital, then optimize at the system level
3. **Make transport decisions at the ED, not in the field —** use secondary triage (Waukesha CT hallway model) to drive OR vs. transfer vs. re-evaluate
4. **Deploy Hospital Area Command during MCIs —** bridge ICS and HICS with real-time C.A.N. intelligence from the receiving facilities
5. **Establish direct hospital-to-hospital communication —** dedicated phone lines between community EDs and specialty/trauma centers for transfer coordination
6. **Align CT's fragmented front end —** standardize PSAP and CMED protocols before adding another coordination layer on top
7. **Build the RMOCC for post-stabilization optimization —** load balancing, specialty matching, and interfacility transport using health system assets

Centralized coordination saves lives — when applied at the right phase of care.

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