NEMSIS Evolution

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Disclosures

National Highway Traffic Safety Administration

- Director & EMS Specialist
- Office of Emergency Medical Services

No conflicts of interest to report.

NHTSA Office of EMS Mission

To reduce death and disability by providing leadership and coordination to the EMS community in assessing, planning, developing, and promoting comprehensive, evidence-based emergency medical services and 911 systems.

ORIGIN

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NEMSIS Built on This Model
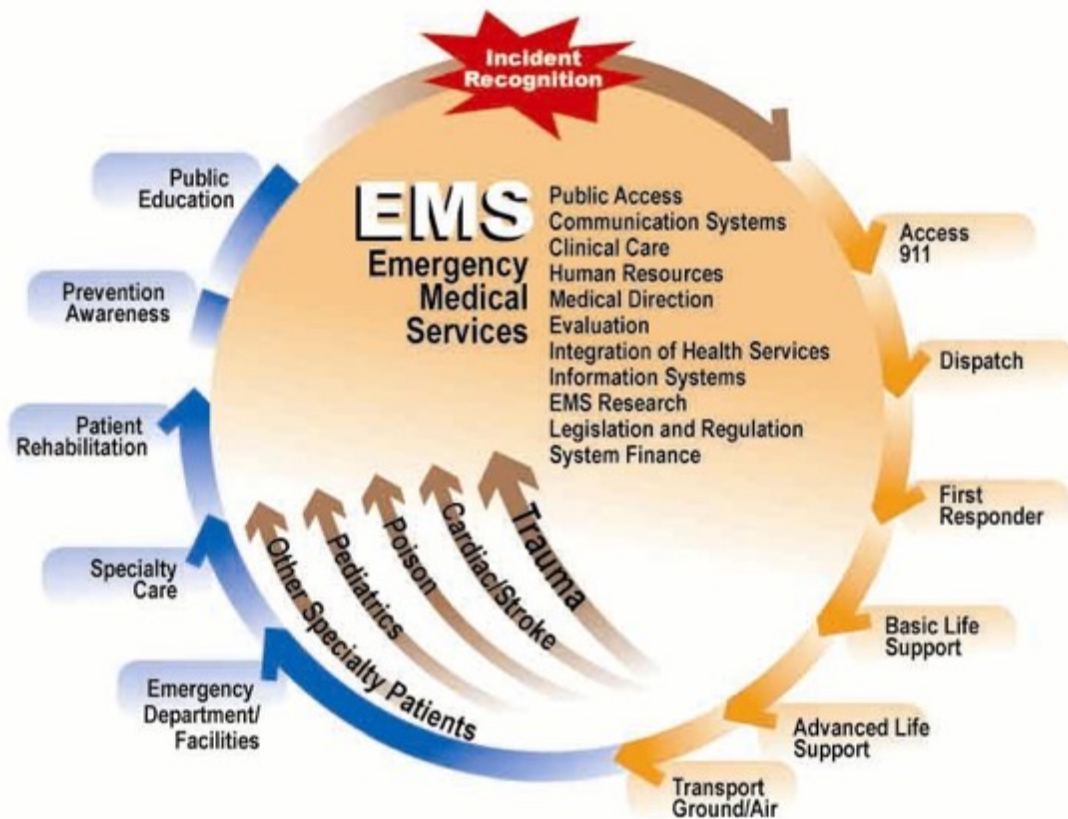
Must Evolve!

Emphasis on and clarity about data and information use

- Create a system designed for patients, clinicians and local EMS organizations, not for policymakers and researchers

- Focus on the information data provides, not compliance

Beyond
EMS Data Collection:
Envisioning an
Information-Driven Future for
Emergency Medical Services

U.S. Department of Transportation
National Highway Traffic Safety
Administration

NHTSA
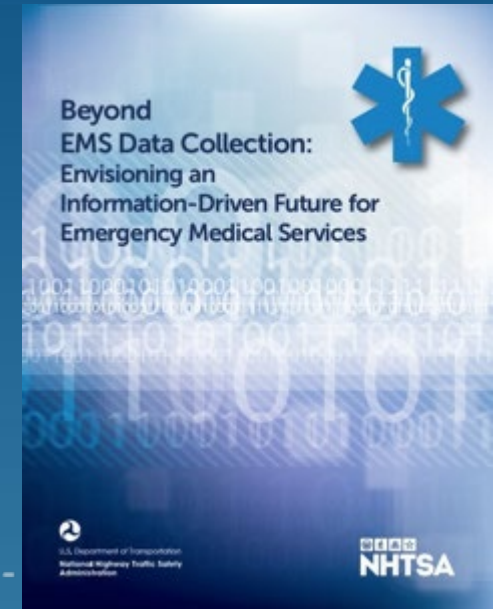
Creation of an information culture

- Explain why data collection is important and useful

- Educate the workforce on data

- Create a cadre of EMS data experts

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Ongoing information system development and improvement

- Intuitive and user-friendly data entry

- Natural language processes and voice recognition technology

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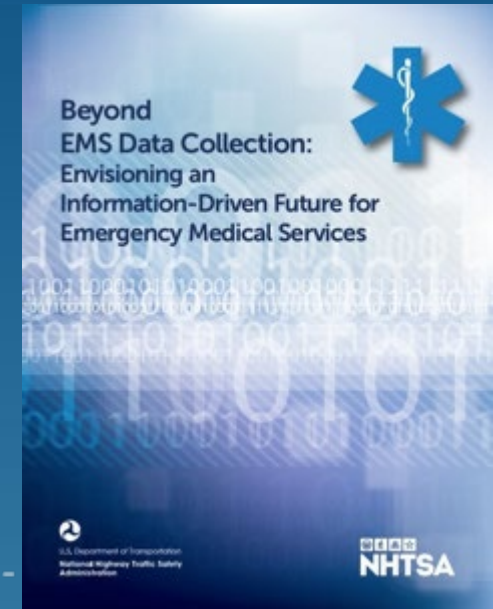
Stakeholder Engagement

Office of the National Coordinator: EMS and HIE
National Security Council: Hospital – EMS data exchange
NASEMSO / ACSCOT: EMS – Hospital data linkage

Standards

- Multiple types of standards/families of standards exist (and continue to evolve) to serve individual purposes (NEMSIS, HL7, FHIR, etc.). Disagreement exists about:
  - how well data can be integrated between standards
  - how well standards can meet requirements outside the target environment
- Are the standards unknown or not implemented? Is it a communication issue or a feasibility/resource issue?
- Each role in the continuum of care may have different flavor of implementation if not a different standard.
- NEMSIS has been a success in driving data collection nationally and exchange within EMS; doesn't ensure data exchange between pre-hospital and hospital
- Need for standards around outcomes to close the loop/provide feedback
- Standards change over time: systems need to be agile to move with them

Understanding Requirements

Pre-hospital care

- ==EMS personnel need a deeper understanding of how they are integrated in the healthcare system from 911 triage through post-acute care==
- Short patient interactions with limited information and little feedback makes improvement in field diagnosis and treatment difficult
- EMS standards and EHR standards developed independently (e.g., leads to difficulty identifying John/Jane Doe)
- Patient-matching is major issue

Healthcare system

- ==Need for better understanding of how other health care clinicians could/would use the EMS information (not just data)==

Incentivizing Change

- Clear, documented authority from the Health and Human Services, Office of Civil Rights on HIPAA rules regulating what hospitals can share
- San Diego as a model example that other orgs can follow; HIEs across the country to learn from
- Incentives for the EMS providers and hospitals entering the data Ensure data quality & Avoid data black-hole
- Creating bridges between "islands of success" (including law enforcement data)
- Need to balance top-down requirements vs. local, state, regional successes
- Linking reimbursement system to sharing and use of integrated data
- Evolving payment models and changing incentive structures
- Linking Centers for Medicare & Medicaid Services and private insurance reimbursement to data exchanges

Value Propositions

Improving time-sensitive care
- Need for contemporaneous data following (or leading) the patient
- Saving time collecting/re-collecting information from the patient

Close the loop
- Systemic improvements in EMS care by providing timely feedback and patient outcomes
- Mental health of EMS personnel (validate their role/help them improve)
- Benchmark performance: Quality and improvement of EMS system
- Can only improve what you measure well: collect the right data

Improvements in education, research, and public health

Emphasis on Patient Care Beyond Data

- <mark>Need for real-time communication component to accompany data:</mark> data might appear in a chart, but still important to communicate between pre-hospital and hospital care on most clinically relevant information
- Making the right data/information presented to the right person at the right time
- <mark>Communicate back to the patient</mark>

Data Sharing: Legal/Technical Barriers

- Misconceptions about the Health Insurance Portability and Accountability Act (HIPAA) rules regulating what data hospitals can share with EMS (what EMS should routinely receive)
- Software/technological limitations in ability to segment EHR to share information EMS should routinely receive
- Communication with stakeholders (e.g., HIPAA coordinator, hospital general counsel) on what's allowed (e.g., patient outcomes specific to EMS encounter vs. prior medical history)
- Defining and implementing sharing of data "minimally necessary for care"
- Managing access and credentialing

Data Integration

- What is the most important data? How does it change based on the setting (e.g., in the field vs. in the emergency department (ED))?
- Where does the electronic patient care report (ePCR) land in the electronic health record (EHR)? In what format?
- Blog text vs. discrete data readily parsed (e.g., PDF vs. XML)
- Mapping data from one standard to another; from one software vendor to another is challenging
- Push vs pull: Emergency medical services (EMS) typically enters data, but does data show up in the EHR automatically (push) or does clinician or someone else have to pull it in to the EHR? Technical details can touch on trade-secrets.
- Culture and workflows can be barriers—deep-set and difficult to change
- Quality control is hard, time/resource consuming, and necessary
- Data collected once is more efficient than re-telling the story
- "Sources of truth" — Multiple sources of the same data / Multiple places to send data

Data Integration – Current State

- Widely Disparate Capabilities
- EMS Documentation Frequently Missing from Hospital EHR
- Rarely Contemporaneous
- EMS Run Sheets Predominately Blog Text (i.e. PDF)
- Discrete Data Mapping is Resource Intensive (limited availability)
- Mapping Interfaces must be Rebuilt for Each System – NonStandard
- KPI Abstraction – Manual in absence of Discrete Data Mapping
    - Code Stroke, Code Sepsis, Code STEMI, Trauma Registry, etc.
- Limited Outcome & Demographic Data Communicated Back to EMS
- Most ePCR's are not able to Push a Pre-Hospital Encounter
- Pre-Hospital Encounter must be manually reconciled

Data Integration – Hospital Role

- Collaborate on Standard Mapping of Discrete Data
  - Outbound & Inbound Designated Data Decks
  - Turnkey Implementation
- Pre-Registration
- Integrate EMS Information into ED Trackers Realtime
  - i.e. ETE/ETA, Patient Complaint, Vital Signs, Treatment Received
- Contemporaneously Integrate EMS Run Sheets into the EHR
- Merge Pertinent Discrete Patient Data into EMR
  - i.e. Vital Signs, Medications Received, IV Fluids Administered, ECG, etc.
- Throughput Discrete Registry Data
  - i.e. Code Stroke, Code Sepsis, Code STEMI, Trauma, etc.

Impact of ET3

Data tracking begins with the 911 call and integral part of the model.
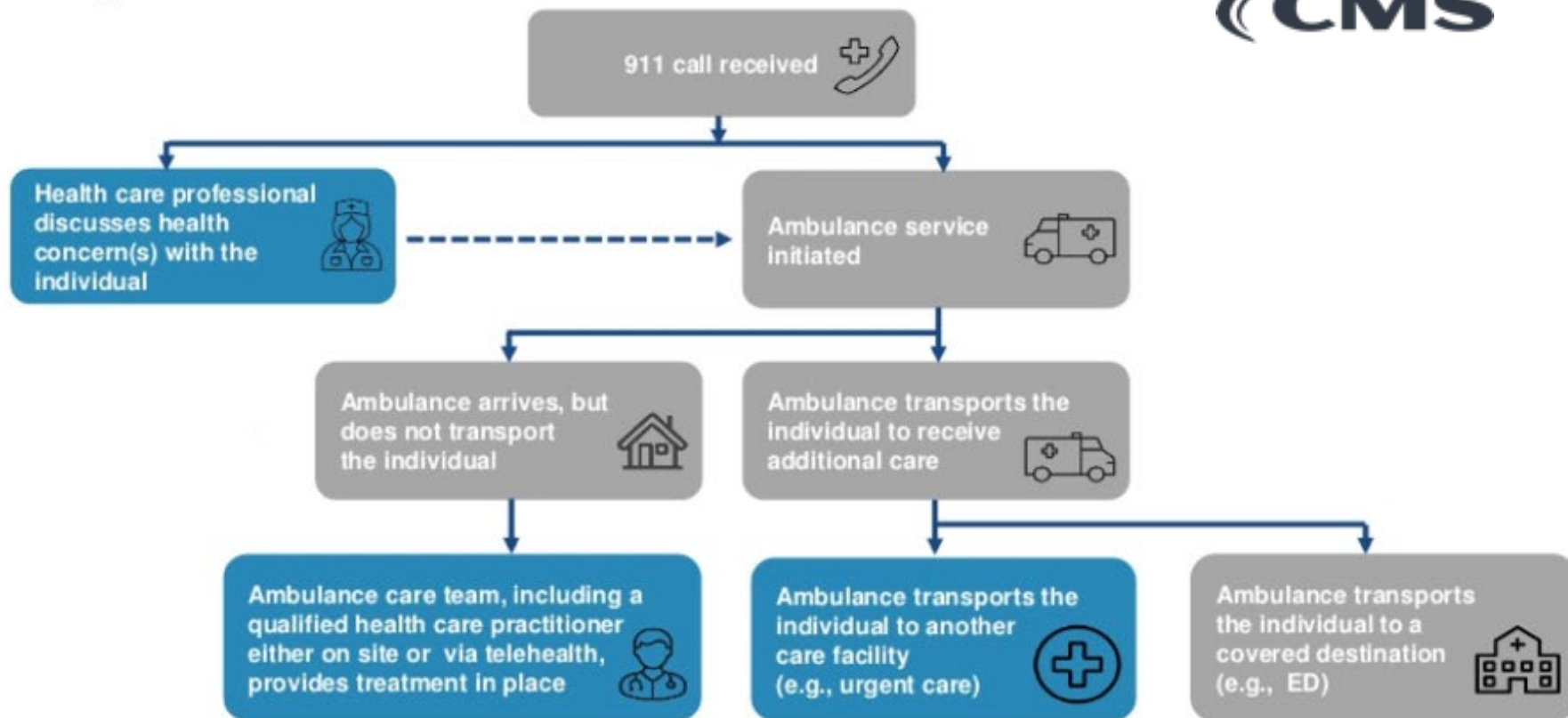
Integration Challenges

- Alignment of data

- EMS access (What do we want?)

- Accountability (EMS responsibilities?)

- Use (What should we do with it?)

- Benefits (Patient, Provider, System)

- Obstacles

Quality Improvement – Value Focused

- Outcomes

- Treatment validation

- Destination validation

- System performance

Process Evolution

- Real-time patient information (on scene)

- Mobile Integrated Healthcare

- Health Care Plan Integration

- Care Access

- Treatment locations (primary care offices, out patient clinics)

Thoughts?

- Where should we go from here?

- What do **YOU** think are the next steps for NEMSIS?

- Where should the NHTSA OEMS focus their resources?
  - Are there timelines?

- Finally, what can we do better?

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Better information leads to better EMS

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