Oregon EMS and Trauma Data Strategic Plan

2024–2026

Contents

Introduction

Within the Oregon Health Authority, the Emergency Medical Services and Trauma Systems Section administers Oregon's emergency medical services (EMS) data. EMS data systems include EMS agency and personnel licensing, EMS agency prehospital patient care reporting, and hospital trauma registry reporting. Other related data systems include hospital emergency department data, hospital discharge data, syndromic surveillance data, specialty registry data (cardiac arrest, myocardial infarction, stroke, etc.), emergency medical dispatch data, rehabilitation data, and health information exchanges.

Oregon's EMS data program has made significant achievements in the past eight years:

- ✓ Implemented Senate Bill 52 (2017), which mandates EMS reporting by licensed EMS agencies
- ✓ Implemented a new EMS agency and personnel licensing system
- ✓ Improved communication with licensees, associations, and other stakeholders
- ✓ Implemented a NEMSIS-compliant prehospital patient care reporting system
- ✓ Obtained substantial funding through the Centers for Medicare & Medicaid Services (CMS) Health Information Technology for Economic and Clinical Health (HITECH) Act to establish and strengthen EMS data system interoperability
- ✓ Achieved collection of most prehospital patient care reports within six hours of the incident, well under the 24-hour administrative rule requirement
- ✓ Conducted comprehensive data quality assessments on the Oregon EMS Information System and Oregon Trauma Registry
- ✓ Developed and implemented data system performance measures and EMS operational and clinical performance measures
- ✓ Established stakeholder advisory workgroups for prehospital EMS and trauma registry data
- ✓ Implemented real-time, secure health information exchange between the prehospital data system and the trauma registry data system
- ✓ Improved automation of program staff workflows
- ✓ Established a real-time copy of prehospital EMS data on the state network to support enhanced data reporting and analysis
- ✓ Promoted the availability of state EMS and trauma data for research and public health activities
- ✓ Integrated EMS data into the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE)
- ✓ Created a public dashboard of EMS data

There's always more work to do. To focus our efforts, OHA pursued a strategic planning process in 2016. The strategic plan laid out three strategic focus areas for Oregon's EMS data for three years. Within each area, goals and objectives were established, along with how progress will be measured.

Updates to the strategic plan, including this one, have removed goals and objectives that have been fully accomplished. This update to the strategic plan includes changes to reflect progress and respond to challenges and opportunities for the next three years (2024–2026).

OHA Vision

A healthy Oregon

OHA Mission

Ensuring all people and communities achieve optimum physical, mental and social well-being through partnerships, prevention and access to quality, affordable health care.

OHA Values

Health Equity

Service Excellence

Integrity

Leadership

Partnership

Innovation

Transparency

The Emergency Medical Services and Trauma Systems Program develops and regulates systems for quality emergency medical care in Oregon. This ensures that EMS Providers are fully trained, that emergency medical vehicles are properly equipped, and emergency medical systems are functioning efficiently and effectively.

Strengths, Weaknesses, Opportunities, and Threats

Strengths

- Increased communication and trust with partners
- Strong public health mindset and integration with other public health areas
- Dedicated and experienced interdisciplinary staff with a unified vision
- Fully implemented EMS and trauma data systems with legislative mandates
- Data workgroups for EMS and trauma

Weaknesses

- Limited integration of EMS and trauma data systems into other clinical and public health data systems
- Need for administrative and fiscal analysis capacity to support EMS and trauma data system operations
- Need for epidemiological and analytical capacity to achieve public health modernization
- Insufficient communication for community partners about existing available resources and future projects
- High volume of initiatives leads to slow progress

Opportunities

- Community Paramedicine and the U.S. Centers for Medicare & Medicaid Services (CMS) Emergency Triage, Treat, and Transport (ET3) pilot reimbursement model potentially add funding mechanisms for EMS agencies to enable more capacity for data work at the agency level
- Partners want education about EMS data
- Forming and nurturing partnerships
- Grant funding
- Increased interest and support among community partners in EMS/hospital data integration
- Interest in and potential funding for specialty registries (cardiac, stroke, etc.)
- Increased experience with electronic medical data within healthcare
- Development of national performance measures for EMS by the National EMS Quality Alliance (NEMSQA)

Threats

- Lack of adequate permanent funding for EMS and trauma data systems
- Lack of quality assurance and feedback mechanisms in EMS agencies and data systems
- Wide variability in the level of data expertise among partners

Gap Analysis

State Traffic Records Assessment

In 2020, the National Highway Traffic Safety Administration (NHTSA) assessed Oregon's traffic records systems, including the EMS data systems.[1] The maturity of the EMS data systems was comparable to that of the state's crash and driver data systems and of other states' EMS data systems[2].

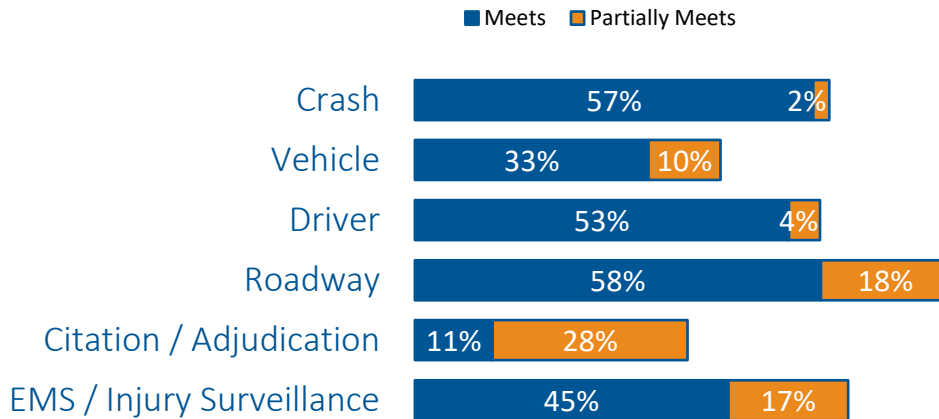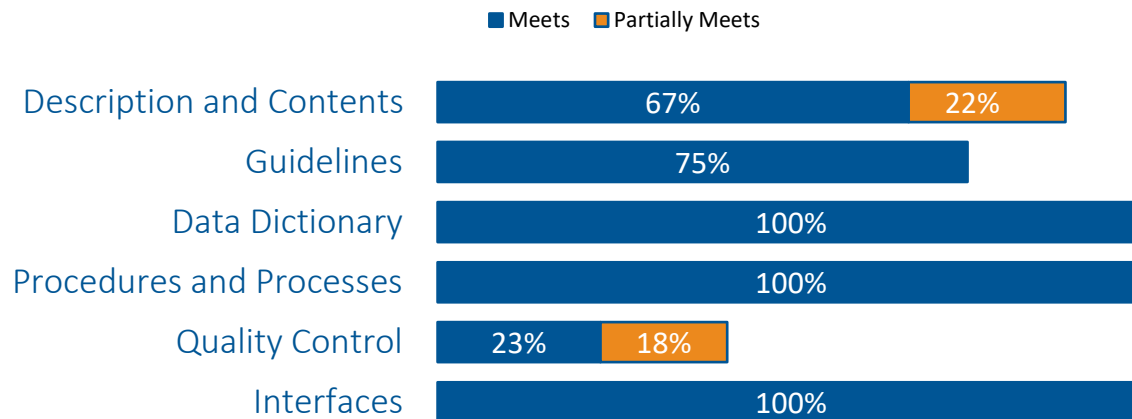**Figure 1. Grading of Oregon's traffic records systems, including EMS data systems (ideal: 100%)**

■ Meets ■ Partially Meets

Category	Meets	Partially Meets
Crash	57%	2%
Vehicle	33%	10%
Driver	53%	4%
Roadway	58%	18%
Citation / Adjudication	11%	28%
EMS / Injury Surveillance	45%	17%

Figure 2. Grading of key aspects of Oregon's EMS / injury surveillance data systems (ideal: 100%)

■ Meets ■ Partially Meets

Aspect	Meets	Partially Meets
Description and Contents	67%	22%
Guidelines	75%	
Data Dictionary	100%	
Procedures and Processes	100%	
Quality Control	23%	18%
Interfaces	100%	

The greatest opportunity for improvement in Oregon's EMS data systems, as identified by the traffic records assessment, is quality control: "a formal, comprehensive quality management process that

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[1] National Highway Traffic Safety Administration Technical Assessment Team, *State of Oregon Traffic Records Assessment* (2021), https://www.oregon.gov/odot/Safety/Documents/Oregon_Traffic_Records_Assessment_Final_Report_2021.pdf.

[2] National Highway Traffic Safety Administration, *State Challenges to Improving Traffic Safety Coordination* (2023), https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813486.

includes quality control metrics and quality control reports… [to ensure that data systems are] timely, accurate, uniform, complete, integrated, and accessible."[3]

Oregon made progress in quality control since the last assessment in 2015, but it is still the area with the most opportunities for improvement. The 2020 assessment specifically recommended the following actions:[4]

- Develop processes to assure that reports rejected for errors are tracked through resubmission to the original database.
- Develop performance measures for each of the component systems in order to document the progress in each. NHTSA's Model Performance Measures document will be helpful in accomplishing this.
- Provide data quality management and other reports regularly to the State TRCC. These reports and the discussions prompted by them can identify opportunities for collaboration and resource sharing.

Oregon Data Strategy

Oregon's first statewide data strategy was published in 2021.[5] Three themes guide the strategy:
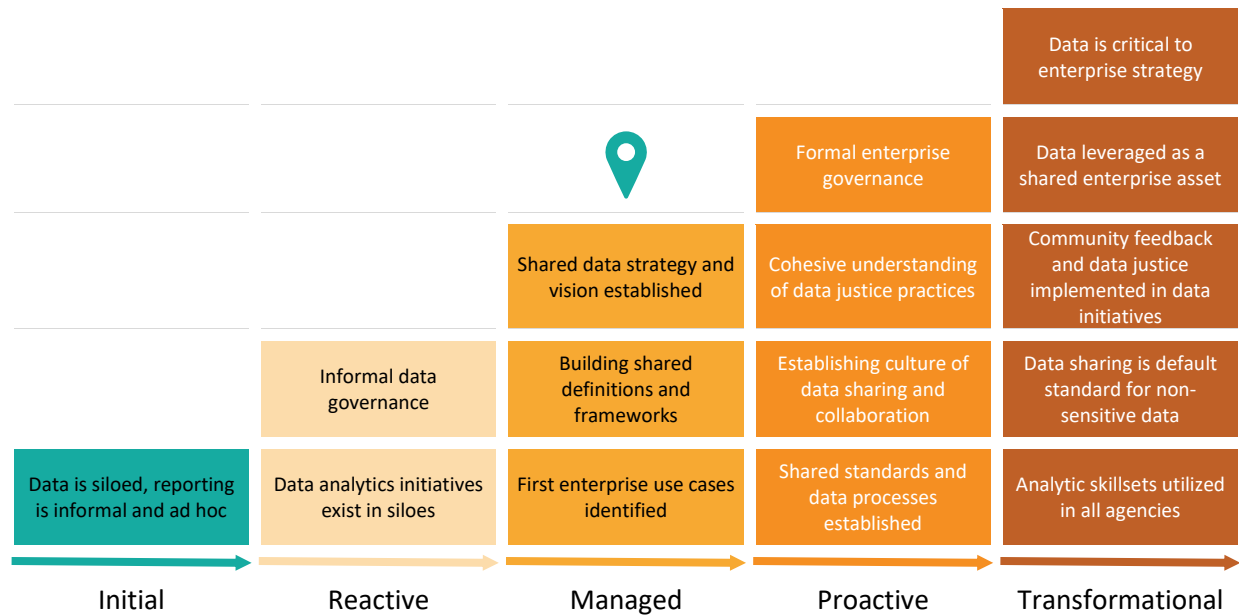
Governance And Effective Management	**Ethical Use**	**Data-Informed Culture**
Documenting and governing our data in order to receive value from it.	Investing in data justice and representation, visibility, and ethics to serve all Oregonians	Working to educate employees, partners, and Oregonians about the use of data to aid in decision-making

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[3] National Highway Traffic Safety Administration, *Traffic Records Program Assessment Advisory, 2018 Edition* (2018), https://crashstats.nhtsa.dot.gov/Api/Public/Publication/812601,41.

[4] National Highway Traffic Safety Administration Technical Assessment Team, *State of Oregon Traffic Records Assessment* (2021), https://www.oregon.gov/odot/Safety/Documents/Oregon_Traffic_Records_Assessment_Final_Report_2021.pdf, 17–18.

[5] State of Oregon Enterprise Information Services, *Oregon's Data Strategy: Unlocking Oregon's Potential* (2021), https://www.oregon.gov/das/OSCIO/Documents/68230_DAS_EIS_DataStrategy_2021_v2.pdf.

The Oregon Data Strategy identifies the maturity of Oregon's data within the following model:

Initial	Reactive	Managed	Proactive	Transformational
				Data is critical to enterprise strategy
			Formal enterprise governance	Data leveraged as a shared enterprise asset
		Shared data strategy and vision established	Cohesive understanding of data justice practices	Community feedback and data justice implemented in data initiatives
	Informal data governance	Building shared definitions and frameworks	Establishing culture of data sharing and collaboration	Data sharing is default standard for non-sensitive data
Data is siloed, reporting is informal and ad hoc	Data analytics initiatives exist in siloes	First enterprise use cases identified	Shared standards and data processes established	Analytic skillsets utilized in all agencies

The 2021–2023 plan focused on increasing maturity through foundational data actions:

Launch statewide governance

Inventory our data assets and coordinate at the agency and enterprise level to establish shared standards

Build internal and external data capacity

Ensure data literacy is a core component of our internal and external data programs, such as open data

Establish a foundation in data justice

Utilize existing frameworks from the Government Alliance for Racial Equity and Actionable Intelligence for Social Policy to build a statewide vocabulary and approach to data ethics and data justice

For the 2023–2025 biennium, "the Oregon Data Strategy is shifting its focus to developing a data and analytics operating model that advances Oregon's maturity in utilizing data as a shared, strategic asset."[6]

In harmony with the Oregon Data Strategy, this strategic plan includes goals for 2024–2026 that are focused on "building a strong foundation" as well as implementing formal enterprise governance and establishing a culture of data sharing and collaboration. The goals encompass building data program capacity, collaboration, shared resources, and reusable software tools.

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[6] State of Oregon Enterprise Information Services, *Oregon's Data Strategy 2023–2025 Biennial Action Plan* (2023), https://www.oregon.gov/eis/data-governance-and-transparency/Documents/Oregon-Data-Strategy-2022-23-Biennial-Action-Plan-3-Pager-F-LR.pdf

Community Voices

The initial strategic planning process included interviews with 46 individuals in 2016. Another round of interviews was conducted with 32 individuals in 2022, representing EMS agencies, hospitals, county governments, state government, community organizations, and others.

Stakeholder voices included the following key themes:

Give us Data

"What's being done with the data? Are we publishing it? Where is it going?"

—EMS Agency Administrator

"We put data in, and it doesn't come back to us, so we have a work-around to get the data back to our Area Trauma Advisory Board."

—Hospital Trauma Program Manager

Integrate

"It's really important for the hospital to know what EMS saw in the field."

—Hospital Trauma Program Manager

"If we don't get outcomes, we don't know if our treatments were effective."

—EMS Agency Administrator

"With increasing volume and workloads, integration becomes more important."

—Hospital Trauma Program Manager

Ensure Data Quality

"Make sure everybody is speaking the same language. Hold us accountable to ensure we're remaining consistent with the requirements."

—EMS Agency Administrator

We're Ready for Performance Improvement

"Measuring your own data consistently is the best way to measure and improve care. Do the things we've been doing actually make a difference for patients? What's the best utilization of resources? What's best for the patient?"

—EMS Agency Administrator

"A better performance improvement program would be especially helpful for Level 3 and 4 trauma hospitals that have more turnover and fewer staff resources. Have a minimum set of performance improvement indicators for everyone to track."

—Hospital Trauma Program Manager

"I want to provide great service to our patients. There's a high influx of new types of calls. I want to see what changes we need to make, training we need to provide, and information we need to give to our

responders. I'd like to be able to compare the changes in my area to the rest of the state."

—Rural EMS Agency Administrator

Lead

"At times the state rules may feel heavy-handed, but they help to center us so that we're doing the same thing and collecting the same information."

—EMS Agency Administrator

"We need to coordinate our efforts statewide to overcome hurdles and offload some of the redundancy of work being done at the local and regional levels."

—Hospital Trauma Program Manager

Use Data to Strengthen the EMS Workforce

"Use the data to focus continuing education requirements, rather than having generic education hour requirements."

—EMS Agency Administrator

"COVID-19 has changed how we do a lot of things, and it has opened a lot of doors. It has shown that patient care doesn't always have to be done the same way. We've been more adaptive."

—Community Paramedicine Program Manager

"As we come out of the COVID-19 pandemic, we need to look at stabilizing our workforce. Things that happened in the pandemic will happen unpredictably in the future. We need to apply the things we've learned in the pandemic so we can be prepared for future changes in the need for people in emergency services. Right now we're not flexible enough to do that."

—State Education Specialist

Strategic Focus Areas

Leadership

Through policy leadership, OHA will make EMS a public health priority, communicate with public health leadership, establish policy partnerships, and promote advocacy of EMS data. Through operational leadership, OHA will strengthen our organizational structure, solidify staffing, establish operational partnerships, and improve communication with stakeholders.
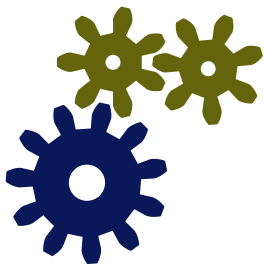
Data System Operations

OHA will collect, share, disseminate, link, analyze, and integrate data. OHA will evaluate the performance of our EMS data systems.

Data Use

OHA will implement state-level EMS system performance improvement, and we will encourage and support regional and local performance improvement. OHA will use data for EMS system development, workforce development, and clinical care. OHA will use EMS data to support public health policy, prevention, and practice.

Goals, Objectives, Measures, and Milestones

The following sections establish the work to be accomplished with Oregon's EMS data systems in 2024–2026, organized by strategic focus area.

Leadership

Goal: Identify and obtain needed resources to implement EMS & trauma data systems and ensure that they are sustained and able to grow with health system needs over time

Objective: EMS & trauma data leadership will complete an assessment of needed resources to support EMS data systems

Measure: Needs assessment completed and updated annually	2024			2025			2026		
			☑			☑			☑

Objective: EMS & trauma data leadership will obtain grant funding to manage EMS data systems

Measure: The total number of grants for which EMS & trauma data leadership has submitted funding applications	2024			2025			2026		
	1			1			1		

Goal: Create and implement a communications plan for the development and maintenance of the EMS & trauma data systems

Objective: EMS & trauma data leadership, with the participation of Public Health Division (PHD) center administrators, will create a communications plan

Measure: The communications plan has been updated annually	2024			2025			2026		
			☑			☑			☑

Goal: Create and implement a cohesive data governance plan for the EMS & trauma Systems data team

Objective: EMS & trauma data leadership will collect documentation of data governance workflows and augment with new material to create a cohesive data governance plan for the program

	2024			2025			2026		
Measure: The data governance plan has been developed		☑							
Measure: The data governance plan has been reviewed and updated annually			☑			☑			☑

Goal: Create advisory workgroups for EMS & trauma data systems

Objective: EMS & trauma data leadership will maintain an advisory workgroup for prehospital EMS data

Measure: The EMS data stakeholder advisory group has met quarterly

2024				2025				2026			
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Objective: EMS & trauma data leadership will maintain an advisory workgroup for trauma registry data

Measure: The trauma registry data stakeholder advisory group has met quarterly

2024				2025				2026			
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Objective: EMS & trauma data leadership will engage with existing groups addressing community paramedicine data

Measure: EMS & trauma data leadership have engaged with existing community paramedicine groups

2024				2025				2026			
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Goal: Facilitate communication with the broader community of EMS and trauma data

Objective: EMS & trauma data leadership will engage in national communities of practice and quality improvement initiatives

Measure: EMS & trauma data leadership has attended monthly calls and annual meetings of the National Association of State EMS Officials (NASEMSO) Data Managers Council

2024				2025				2026			
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Measure: EMS & trauma data leadership has attended semi-monthly calls and annual meetings hosted by the NEMSIS Technical Assistance Center

2024				2025				2026			
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Measure: EMS & trauma data leadership has formed an EMS data community of practice focused on technologies and platforms used by Oregon in common with others

2024				2025				2026			
	✓										

Data System Operations

Goal: Collect complete, accurate, and usable data

Objective: Collect NEMSIS version 3 prehospital data from EMS agencies

Measure	2024				2025				2026			
Measure: The percentage of licensed transporting agencies submitting NEMSIS version 3 data in a given month	95											
Measure: EMS & trauma data staff have conducted targeted outreach to registered non-transporting 911 scene response agencies about voluntary submission of NEMSIS version 3 data	✓				✓				✓			
Measure: The percentage of reporting agencies submitting NEMSIS version 3.5 data in a given month		100										

Objective: Collect timely NEMSIS version 3 prehospital data

Measure	2024				2025				2026			
Measure: The percentage of patient care reports accepted by the state data system within 24 hours from the time the EMS unit was back in service in a given month			70				80					90

Objective: Collect timely trauma registry data

Measure	2024				2025				2026			
Measure: The percentage of trauma registry records accepted by the state data system within 60 days from the time of hospital discharge in a given month	80											

Objective: Implement new Oregon Trauma Registry solution

Measure	2024				2025				2026			
Measure: The vendor contract for trauma registry implementation has been signed			✓									
Measure: The vendor has trained the EMS & trauma data team on managing the trauma registry					✓							
Measure: The new trauma registry site is live								✓				
Measure: Legacy data has been migrated									✓			
Measure: The EMS data team has configured the new trauma registry							✓					
Measure: All hospitals and users have migrated to using the new trauma registry								✓				

Objective: Update the state prehospital data elements and data quality rules semiannually to meet national and Oregon needs

Measure	2024		2025		2026	
Measure: Updated state resources and validation rules published via the NEMSIS Technical Assistance Center	☑	☑	☑	☑	☑	☑
Measure: State staff have notified EMS agency administrators of the updated data quality rules and their impact on reporting	☑	☑	☑	☑	☑	☑

Objective: Update the trauma registry data elements and data quality rules annually to meet national and Oregon needs

Measure	2024		2025		2026	
Measure: The trauma registry has been updated to implement annual updates to the National Trauma Data Standard		☑		☑		☑

Objective: Improve the ability of EMS data systems to track equity in health and healthcare

Measure	2024		2025		2026	
Measure: EMS data staff have developed an implementation plan for tracking equity metrics in EMS and trauma data systems			☑			
Measure: EMS data staff have developed equity metrics using existing data elements in the EMS and trauma registry data systems				☑		

Goal: Use software tools to expand capacity and streamline work processes

Objective: Develop modular packages to support data analytics

Measure	2024		2025		2026	
Measure: An R programming language package has been developed to collect report layout and style assets, including color palettes, themes, and templates.		☑				
Measure: The total number of complete, documented, reviewed, and tested functions for common analytical tasks that have been implemented as R programming language scripts	8					
Measure: The total number of R programming language pipelines that have been developed for data quality and data system performance measure monitoring			5			
Measure: The total number of automatically-updated lookup tables that have been developed for common analytical tasks	4		7		10	

Objective: Implement a collaborative integrated development environment to support collaboration among program staff in data analytics

Measure	2024		2025		2026	
Measure: The integrated development environment has been implemented		☑				

Goal: Develop and implement a data system evaluation plan

Objective: Establish licensing data system performance measures

	2024			2025			2026		
Measure: The number of licensing system performance measures implemented in automated reporting			6						

Objective: Establish trauma data system performance measures

	2024			2025			2026		
Measure: The number of trauma system performance measures implemented in automated reporting		3							

Objective: Create a dashboard of data system performance measures

	2024			2025			2026		
Measure: The number of licensing system performance measures implemented in automated reporting						☑			

Goal: Develop and assess data linkage methods for public health surveillance and quality assurance needs

Objective: Create and test methods for linking datasets using crash, EMS, hospital, trauma, and vital records (death) data

	2024			2025			2026		
Measure: The EMS data team has designed a replicable procedure for linked public health data sets								☑	
Measure: The EMS data team has scoped a project plan to link public health datasets that track a patient across the episode of care								☑	
Measure: The EMS data team has developed an implementation plan for a server-based repository of a linked analytical dataset								☑	

Goal: Implement timely, secure health information exchange using EMS data and other healthcare data

Objective: Implement real-time data integration between the EMS licensing data system and the prehospital data system

	2024			2025			2026		
Measure: The percentage of licensed transporting agencies for which licensing data has been transmitted from the licensing data system to the prehospital data system				100					
Measure: The percentage of registered non-transporting 911 scene response agencies for which licensing data has been transmitted from the licensing data system to the prehospital data system				100					

Objective: Implement real-time, secure health information exchange between the prehospital data system and the trauma registry data system

Measure: The prehospital/trauma data system integration has been updated to support NEMSIS 3.5 and improvements requested by trauma registry users

2024				2025				2026			
☑											

Objective: Implement real-time data integration from the prehospital data system to the Cardiac Arrest Registry to Enhance Survival (CARES)

Measure: The CARES integration capability has been purchased, configured, tested, and documented

Measure: The total number of EMS agencies for which CARES integration has been implemented

2024				2025				2026			
				☑							
					1			10			

Goal: Implement community paramedicine data reporting

Objective: Assess community paramedicine reporting needs among EMS agencies and other stakeholders.

Measure: A community paramedicine reporting needs assessment report has been completed

2024				2025				2026			
				☑							

Objective: Adopt a minimum data set and data dictionary for community paramedicine reporting that includes a list of data elements, definitions, data types, and other constraints

Measure: A community paramedicine dataset has been adopted

2024				2025				2026			
							☑				

Goal: Train users on data entry and administration

Objective: Train users and agency administrators of the prehospital data system on submitting data and managing agency reporting to the state

Measure: A new or updated guidance document or training video is published

2024				2025				2026			
☑				☑				☑			

Objective: Train users and hospital administrators of the trauma registry on submitting data and managing hospital reporting to the state

Measure: A new or updated guidance document or training video is published

2024				2025				2026			
	☑				☑				☑		

Data Use

Goal: Train users on data use

Objective: Train users of the prehospital data system on the use of the report writer to monitor performance

	2024			2025			2026		
Measure: A new or updated guidance document or training video is published		☑			☑			☑	

Objective: Train users of the trauma data system on the use of the report writer to monitor performance

	2024			2025			2026		
Measure: A new or updated guidance document or training video is published			☑			☑			☑

Objective: Train hospital staff to use the hospital portal to retrieve prehospital patient care reports

	2024			2025			2026		
Measure: A new or updated guidance document or training video is published	☑			☑			☑		

Goal: Provide feedback to submitters

Objective: Develop capacity for data quality reporting to system users

	2024			2025			2026		
Measure: A standardized and replicable procedure for EMS & trauma dataset documentation/metadata has been developed	☑								
Measure: A custom package of parameterized functions for pulling standardized EMS and Trauma datasets has been developed.			☑						
Measure: General functions for calculation of EMS & trauma data quality metrics has been developed.	☑								
Measure: A data quality toolkit has been published.				☑					
Measure: Staff members have been hired for the data quality monitoring project		☑							

Objective: Provide data quality feedback to data system users

	2024			2025			2026		
Measure: The EMS data team has disseminated quarterly data quality reports to EMS agencies, hospitals, and Area Trauma Advisory Boards (ATABs)				☑					
Measure: The number of EMS agencies provided with tools and technical assistance for data quality improvement.				20	40	60	80	100	120	140
Measure: The number of hospitals provided with tools and technical assistance for data quality improvement.				6	12	18	24	30	36	43

Goal: Strengthen performance improvement systems

Objective: Adopt state-level operational, clinical, or public health surveillance performance measures for EMS and trauma

Measure	2024				2025				2026			
Measure: The number of trauma system performance measures that have been implemented			4				8					
Measure: The number of NEMSQA EMS performance measures that have been implemented				10				14				

Objective: Develop and disseminate a basic performance improvement framework and toolkit for use by EMS agencies

Measure	2024				2025				2026			
Measure: Publication of a performance improvement framework and toolkit on the EMS website						☑						

Objective: Develop and disseminate performance improvement reports to Area Trauma Advisory Boards (ATABs) with benchmarking to statewide data

Measure	2024				2025				2026			
Measure: ATAB performance improvement reports have been developed						☑						
Measure: ATAB performance improvement reports are disseminated to ATABs							☑					

Goal: Support data use

Objective: Create public dashboards of summarized EMS and trauma registry data

Measure	2024				2025				2026			
Measure: Public trauma registry data dashboard has been created and is accessible to the public							☑					
Measure: Develop fully parameterized update procedure for EMS data dashboard				☑								
Measure: Develop fully parameterized update procedure for trauma registry data dashboard									☑			
Measure: Public EMS and trauma registry data dashboards are updated						☑				☑		

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