

California EMSA: Transforming **Emergency Medical Services** with the Amorphic Data Platform

Executive Summary

The California Emergency Medical Services Authority (EMSA) manages one of the most critical public health infrastructures in the state. Despite operating an expansive ecosystem of emergency care data, EMSA was limited by siloed systems, fragmented datasets, and insufficient interoperability. These limitations restricted their ability to make timely, informed decisions.

To address this, EMSA implemented the Amorphic Data Platform, a cloud-native, serverless solution built on AWS. The platform enabled automated data ingestion, clinical standardization, privacy-focused data cleansing, and AI-ready analytics across a fully integrated environment. This transformation not only improved service delivery and health equity but also generated an estimated \$35 million in cost savings over five years.

About the Customer

California EMSA is responsible for coordinating emergency medical services across the state. Its operations depend on timely, accurate data from various sources, including CEMSIS (California EMS Information System), Health Information Exchanges (HIEs), trauma registries, Medi-Cal records, and licensing databases. This data informs state policies, operational decisions, and the overall quality of patient care delivered in the field and in emergency departments.

Business Problem

While EMSA had access to large volumes of data, its systems lacked the integration and flexibility needed for real-time decision-making and policy evaluation. Specific challenges included:

- 1** Disconnected systems that made it difficult to unify datasets
- 2** Difficulties in analyzing data across multiple dimensions, including geography and demographics

3 Barriers to addressing key policy and equity questions such as:

- Who is using EMSA services, and how does usage vary by demographics and insurance status (e.g., Medi-Cal)?
- What proportion of Medi-Cal patients are utilizing EMS services, including ambulance transport?
- Are field medical interventions effective in improving patient survival and outcomes?
- How do patient outcomes compare across different care pathways, such as ambulance transport versus walk-in visits?
- What are the hospital disposition codes and final clinical outcomes associated with EMS interventions?
- Is EMS response equitable in terms of responder distribution, response times, and trauma-informed care delivery across populations and regions?

EMSA needed a centralized, modern data solution to unify these insights and guide better decisions.

Cloudwick's Solution: EMSA on the Amorphic Data Platform

To resolve these challenges, EMSA employed the Amorphic Data Platform. This solution created an end-to-end data modernization environment focused on data unification, activation, governance, and advanced analytics.



Data Integration and Automation

- Automated ingestion from CEMSIS and credentialing databases



Data Privacy and Quality

- Automated cleansing, and transformation of all datasets
- Support for compliance requirements and public trust in data privacy



Scalable, Cost-Effective Infrastructure

- Fully serverless and cloud-native on AWS
- Estimated \$35 million in total cost savings over a five-year period

Use Cases: How Amorphic Answers California's Most Pressing EMS Questions

1

Identify who is using the EMS system to allocate resources more effectively based on demographic trends and usage patterns.

2

Analyze Medi-Cal utilization rates to ensure appropriate resource planning for high-demand patient segments.

- 3

Track ambulance usage by Medi-Cal patients to optimize deployment and ensure adequate transport services.
- 4

Measure the effectiveness of field interventions to improve clinical protocols and save more lives.
- 5

Monitor hospital disposition codes to enhance coordination between EMS providers and hospitals for better patient handoffs.
- 6

Compare outcomes for walk-ins versus ambulance transports to refine EMS protocols and improve emergency response strategies.
- 7

Evaluate the distribution of EMS responders to ensure equitable coverage and service access across regions.
- 8

Assess equity in trauma-informed care delivery to identify and address disparities in clinical treatment and support.
- 9

Analyze average response times by demographic groups to uncover service gaps and improve response strategies.
- 10

Evaluate clinical outcomes by demographics to ensure effective and equitable care across all population segments.

Results Achieved

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Improved Decision-Making

Comprehensive, real-time insights allowed EMSA leaders to act with confidence across all operational areas.
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Greater Equity in Care Delivery

Data on demographics, geographies, and response times enabled more equitable resource distribution and intervention strategies.
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Streamlined Operations

Automated ingestion and self-service analytics improved efficiency and reduced dependency on IT teams.
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Better Patient Outcomes

Real-time access to care metrics, combined with policy-level analysis, enabled improvements in field interventions, transport, and hospital coordination.

Looking Ahead: Future Capabilities and Planned Enhancements

As part of its long-term vision for data modernization, EMSA has identified several high-impact initiatives to be delivered in future phases. These enhancements will extend the platform’s capabilities across data integration, privacy, and advanced analytics.

Planned Enhancements Include:

- Enable automated ingestion from additional systems including Health Information Exchanges (HIEs), trauma registries, and Medi-Cal databases.
- Expand data unification by consolidating structured and unstructured datasets through Amazon HealthLake.
- Provide natural language and SQL-based query interfaces to improve accessibility for non-technical stakeholders.
- Activate data for advanced analytics using Amazon SageMaker Studio and Bedrock Studio to support predictive modeling and AI-powered decision support.
- Integrate geospatial tools such as ArcGIS to enable spatial analysis of EMS activity and equity patterns.
- Provide natural language and SQL-based query interfaces to improve accessibility for non-technical stakeholders.

These future capabilities are part of EMSA's phased strategy to continuously evolve its data infrastructure in support of improved care delivery, policy insight, and public health outcomes statewide.

Conclusion

The partnership between EMSA and Cloudwick demonstrates how a modern data platform can transform public health operations. With Amorphic, the agency has achieved full visibility into statewide EMS activity, enabled more equitable and effective care, and established a foundation for long-term innovation in emergency medical services.

Next Steps

Start small, achieve quick wins and build a scalable data foundation powered by AI and automation. Contact Cloudwick at sales@cloudwick.com for a demo.