

# Oregon EMS Prehospital Database Project

Report to the Oregon Office of Rural Health

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### Acumentra Health's scope of work

1. Evaluate the prehospital data collection system that will be implemented in spring/summer 2008 by Oregon EMS agencies
2. Research and evaluate other state EMS websites to identify best practices
3. Provide a report of recommendations and next steps for engaging EMS agencies in quality improvement projects based on data elements available, by August 2008

### Overview of 2008 EMS Patient Data Pilot Project

Partners in the pilot include the Oregon Office of Rural Health, the Oregon Department of Transportation, Oregon Health & Science University, and EMS and Trauma Systems Program.

Partners have selected ImageTrend, the prehospital data collection system most widely used in the United States. The ImageTrend EMS State Bridge is a statewide prehospital data collection, analysis, and reporting system for EMS data management. It is certified by the National Highway Transportation Safety Administration (NHTSA) as a "Gold"-level compliant EMS data system (capable of collecting all 400+ data elements defined by the National EMS Information System [NEMSIS]).

The Oregon EMS website (<http://egov.oregon.gov/DHS/ph/ems/pre-hosp/index.shtml>) lists 60 data elements to be collected in the summer pilot program from 18–19 participating agencies (out of 138 agencies in Oregon). Data elements were primarily selected from the list provided by the state of Washington EMS system, another user of ImageTrend. Participating agencies were to submit elements by June 15, 2008, for all events in May 2008.

The pilot is to focus on three areas:

1. Collect EMS patient encounter data from EMS providers for the month of May
2. Enter EMS agency data, using the electronic system to create complete patient care records
3. Determine whether data are useful (and which data elements should be included if an encounter database is established) to entities, including EMS providers and medical directors, regional and statewide programs, the State Trauma Advisory Board, and Oregon Emergency Medical Services for Children.

NEMSIS currently encompasses 427 data elements. The "National Elements" dataset, a subset of 87 elements required for "Silver"-level NEMSIS compliance, contains mostly demographic elements that are not sufficient for performance improvement uses of the data. North Carolina, one of the most active states in using the data for performance improvement, is collecting 230 data elements.

## Acumentra Health research and conclusions

### *Study design*

#### Acumentra Health

- Conducted background research on prehospital database systems, including identifying national data elements and reviewing data elements OR agencies are collecting in the pilot project
- Identified and interviewed program leaders from states that have implemented and are using electronic data collection systems. Focus was on states that
  - are using ImageTrend, and/or
  - are submitting higher numbers of data elements to the national databaseIdentified New Hampshire and Minnesota (both using ImageTrend) and North Carolina (using a home-grown data collection system, with national-level expertise as evaluators of all data collection systems to NEMSIS standards, performance and systems improvement)
- Interviewed Oregon EMS and Trauma Director Robert Leopold

### *Findings*

- EMS agencies in the Oregon pilot are collecting less than the minimum “National Elements” subset of data elements, which in itself is insufficient to support performance improvement activities.
- Statewide adoption of data collection seems to require a state mandate requiring agencies to report (i.e., voluntary participation will not result in 100% of agencies reporting). The three states interviewed all mandate reporting within 24 hours or 30 days.
- Focus/objective for implementing a prehospital database differs among states. Some collect data with the goal of collecting accurate and complete patient report/records; others focus on application of the data by EMS agencies and a statewide program for performance improvement.
  - New Hampshire and Minnesota emphasize data accuracy and creation of a complete patient record. Analysis and review of reports (and performance improvement) remains an individual agency choice and function, with few statewide requirements.
  - North Carolina has a proactive role for the state. The statewide plan includes toolkits that EMS agencies are required to use for performance assessment and if necessary, follow-up actions. Resources include state benchmarking, site visits, and suggested interventions for improvement.
- Data can be used and analyzed for
  - operational analyses—unit deployment, time studies (e.g., response time)
  - clinical information—skills proficiency of staff (intubation, intravenous), trauma on-scene times, adherence to protocols, medications used and any adverse reactions, pain management
  - outcomes
  - clinical performance/protocol development

### *Conclusion*

The data elements included in Oregon’s prehospital data project do not meet the National EMS Dataset as defined by NEMSIS. The dataset is insufficient for understanding and improving operations, improving clinical performance, or developing treatment protocols.

Given the limited scope of the Oregon EMS prehospital data collection pilot project, both in number of agencies participating and number of data items being collected, the primary focus of the pilot seems to be on discovering potential barriers to effective and accurate data collection, especially as data collection is expanded into all agencies across the state. Our interviews with leaders in other states with strong EMS data collection programs confirm the importance of collecting complete and accurate data.

However, a prehospital data collection system is more likely to have a positive impact on the performance of EMS services when the database is part of a larger statewide plan to monitor and improve performance. Such a plan would include specific uses and monitoring of the data, including specified reports and protocol development. We also believe that a successful plan requires the support of the legislature in the form of mandatory data collection for all agencies across the state, as well as reasonable funding.

Specifically, we recommend that the Oregon EMS System:

- Identify objectives, and if possible, develop a plan, for use of statewide data before advocating mandatory reporting. If performance improvement is a primary objective, then improvement activities should drive selection of the data elements to collect.
- Select two topics for performance improvement and collect sufficient data to prepare reports and develop interventions for improved performance. We suggest the following:
  - EMS System Response Time: the part of EMS most visible to the public
    - See North Carolina’s Toolkit, which analyzes and reports on event data (sample report available at <http://www.emspic.org/?q=node/23>)
    - Oregon’s dataset currently includes 30 of the 43 data elements required
  - EMS Acute Cardiac Care (STEMI): project already underway with OHSU
    - See North Carolina’s Toolkit (sample report available at <http://www.emspic.org/?q=node/26>)
    - Oregon’s dataset currently includes 14 of the 19 data elements required
- Review and consider other uses of a prehospital database with state and local agencies
  - Patient care is primary. Potential improvement areas:
    - on-scene times
    - staff skills
    - clinical outcomes
    - appropriate medication and equipment use
    - development and adherence to protocols
  - Operations improvement areas:
    - decrease response times
    - increase efficiencies in deployment
    - monitor and forecast demand

For more background, see workshop materials titled “Analyzing and Presenting EMS Data” (January 2006 - Anaheim, CA), available for download at <http://www.nedarc.org/nedarc/resourceLibrary/presentations.html>.

- Develop a statewide plan to incorporate additional data items over time to address other identified uses of the data.