



Health Information Exchange & Emergency Medical Services

June 21, 2016



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What is Health Information Exchange

Health Information Exchange (HIE) refers to the secure, effective and efficient sharing of electronic health data across the boundaries of health care institutions. An HIE organization is an entity that oversees or facilitates the exchange of health information among a diverse group of healthcare stakeholders within and across regions, according to nationally recognized standards. Some also allow authorized care team members to use the HIE organization like a search engine to find and use relevant information quickly and efficiently.¹ When widely used, the exchange of health information has the potential to transform the way care is delivered by improving physician workflow, fostering increased communication among providers and patients, improving the ability to access and analyze data, and reduce healthcare costs.

There are various ways to exchange health information:² directed exchange (push) and query-based exchange (pull), are the most common types of exchange of health information in use today.

- Directed Exchange (push) – capability to send and receive a message securely from one provider to another. This is also referred to as “point-to-point” or “transactional” exchange.
- Query-Based Exchange (pull) – enables users to find and/or request information about one or more individuals from various other care team members, allowing for the creation of a longitudinal, comprehensive view of an individual’s history.
- Consumer Mediated Exchange – ability for individuals to aggregate and control the use of their health information among their care team.

Facts and Figures

- Three-quarters of hospitals electronically exchanged health information with outside providers in 2014.³
- Physicians in the Emergency Department (ED) lack important or critical individual information 32% of the time.⁴
- Each year in the United States, approximately 114 million visits to EDs occur, and 16 million of these individuals arrive by ambulance.⁵

To learn more about common use cases for EMS care team members to participate in health information exchange, visit [Health Information Exchange Issue Brief: National Emergency Medical Services Use Cases](#)

¹ Health Information Exchange (HIE)." HealthIT.gov. The Office of the National Coordinator for Health IT, 12 May 2014. Web

² Health Information Exchange (HIE)." HealthIT.gov. The Office of the National Coordinator for Health IT, 12 May 2014. Web

³ Madden, Jeanne M., Matthew D. Lakoma, Donna Rusinak, Christine Y. Lu, and Stephen B. Soumerai. "Journal of the American Medical Informatics Association." Missing Clinical and Behavioral Health Data in a Large Electronic Health Record (EHR) System. Journal of the American Medical Informatics Association, 14 Apr. 2016. Web.

⁴ Garber, Larry, MD. Making an IMPACT on Care Transitions in Central Massachusetts. Reliant Medical Group, n.d. Web

⁵ Emergency Medical Services At the Crossroads." The National Academies Press. Institute of Medicine, 13 June 2006. Web.

Current Landscape

Emergency Medical Services (EMS) systems are universally regarded as an essential part of the health care delivery system today.⁶ A 2007 Institute of Medicine report stated, “EMS operates at the intersection of health care, public health, and public safety and therefore has overlapping roles and responsibilities. Often local EMS systems are not well integrated with any of these groups and therefore receive inadequate support from each of them.”⁷

The ability to use an HIE organization as a resource for an individual’s records is especially important to field paramedics and staff in an emergency room setting as individuals or their families may be unable to assist with basic, reliable health information. Not only is it critical that first responders have access to relevant health data, such as medical problems, medications, allergies and end-of-life decisions, but the information they collect must be efficiently communicated to downstream providers. This process is facilitated by “real-time” patient bedside search and entry by EMS care teams and transmittal to the emergency department. In the future, the use of community paramedics charged with managing chronic conditions to reduce readmission or evaluation of non-emergency patients with alcohol, substance abuse, or behavioral health problems could benefit from more robust access to health information to improve clinical care and access to related services.

Benefits of HIE

- Give EMS providers the ability to use full Search, Alert, File, Reconcile (SAFR) functionality⁸:
 - Search individuals’ health information for problems, medications, allergies, and end-of life decisions (i.e. Physician Orders for Life Sustaining Treatment (POLST), or do-not-resuscitate order (DNR) to enhance clinical decision making in the field;
 - Alert the receiving hospital about an individual’s status directly onto a dashboard in the emergency department to provide decision support and prepare for an individual’s arrival—especially for treatment requiring time sensitive treatment or therapy such as trauma, heart attack, or stroke.
 - File the EMS patient care report structured data directly into the receiving facility and HIE Electronic Health Record (EHR) for a better longitudinal record;
 - Reconcile the EHR information including diagnoses, disposition and billing and payment back into the EMS patient care report for use in improving the EMS system, clinical quality measures, and population health, making EMS a full participant in the exchange of electronic health information. For EMS care teams, the verification of billing and payment information will serve as a critical return on investment.

⁶ Kizer, Kenneth W., MPH, Karen Shore, PhD, and Aimee Moulin, MD. "Community Paramedicine: A Promising Model for Integrating Emergency and Primary Care." (n.d.): n. pag. UC Davis Institute for Population Health Improvement, July 2013. Web.

⁷ Emergency Medical Services At the Crossroads." The National Academies Press. Institute of Medicine, 2007. Web.

⁸ Search, Alert, File, Reconcile (SAFR) Functionality for Emergency Medical Services was developed by the California Emergency Medical Services Authority (Daniel Smiley, June Iljana, Ryan Stanfield) under ONC Cooperative Agreement Grant #90IX0006/01-00 (2015)

- Efficient exchange of health information may improve the individual and care team experience by ensuring accurate communication of critical data from the first responders and ambulance transport to the in-hospital care team members, as well as assist in delivering the patient to the proper health facility.
 - Integrated information systems allow for more efficient transitions of care between traditionally partitioned sections of the health care system, including prehospital, emergency room, inpatient, and outpatient care.
 - For example, Admissions, Discharge, Transfer (ADT) Alerts inform individuals' care teams of a change in status.
 - HIE organizations ensure more effective care delivery, patient tracking, and resource coordination during major U.S. disasters and emergencies for patients who are displaced from their normal location or health care team.
 - Incorporating EMS and acute care data increases the ability to analyze and trend on first responder impact on quality outcomes.
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Challenges of HIE

- Not all EMS care teams have adopted electronic patient care reports or incorporated “real-time” entry of patient information.
- Emergency treatment requires rapid query of disparate information systems and return of actionable information to care team members.
- Inability to efficiently exchange health data between EHR systems and Electronic Patient Care Reporting (ePCR) systems and have defined landing fields for that data.
- Data systems require customized interfaces for connection to multiple systems.
- Interface development is time consuming and expensive.
- EMS care teams must accept changes in workflow and culture to optimize new health information technology.