

## Colorado Connecting Communities— Health Information Collaborative

---

<b>Principal Investigator:</b>	Davidson, Arthur, M.D., M.S.P.H.
<b>Organization:</b>	Colorado Regional Health Information Organization and University of Colorado Health Sciences Center
<b>Contract Number:</b>	290-04-0014
<b>Project Period:</b>	October 2004 – January 2010
<b>AHRQ Funding Amount:</b>	\$5,000,000
<b>Summary Status as of:</b>	January 2010, Completion of Contract

---

### Target Population: General

**Summary:** This project built a prototype data exchange among four health care organizations as a learning laboratory to identify architecture and policy issues the community needs to address to establish a sustainable business model for health information exchanges. The four partners of the Colorado Regional Health Information Organization (CORHIO) project are Denver Health and Hospital Authority, Kaiser Permanente Colorado, The Children’s Hospital, and the University of Colorado Hospital. This project is one of six Agency for Healthcare Research and Quality (AHRQ)-sponsored State and Regional demonstration projects begun in late 2004 and early 2005 to create a State or regional health information exchange.

The CORHIO project uses a robust electronic master patient index (eMPI) that allows records to be matched and shared at the point of care (POC). This system offers authorized emergency room practitioners at the four sites access to radiology reports, laboratory results, prescribed and dispensed medication information, EKG reports, registration information, and problem lists aggregated from all sites. All existing standards from the Healthcare Information Technology Standards Panel were incorporated into the architecture. CORHIO and its partners went live with a demonstration on December 1, 2008.

The project team was able to successfully develop a non-profit, independent entity to promote exchange of health information in Colorado. Policies, procedures, and the technical and legal infrastructure were developed and deployed to allow secure, federated exchange of information between the four large health care organizations over the Internet utilizing Federal standards and protocols to the extent that they existed. A robust eMPI for nearly 2,500,000 registrants (1,400,000 individuals) was developed and much experience gained around how to build and utilize an eMPI.

### Project Objectives:

- Facilitate the live exchange of clinical information across four sites. **(Achieved)**
- Evaluate clinical impact. **(Achieved)**
- Analyze role of the Medicaid program. **(Achieved)**
- Develop a sustainability model. **(Achieved)**

**2010 Activities:** The project ended in January 2010 during which time the final report was developed and submitted to AHRQ.

**Impact and Findings:** CORHIO's enterprise MPI (eMPI) is a core component of CORHIO and any health information exchange. Much effort went into assuring the accuracy of linking patient identities across institutions. The process by which partners reviewed potential duplicates identified by CORHIO was important to identifying and resolving critical technical and algorithmic problems. Partners were a key part of increasing the value and accuracy of the eMPI. After optimization, partners indicated that the potential duplicate reports were very valuable and that they would like to continue to receive the reports and provide feedback to CORHIO.

The POC system had limited usage during the production period. Deployment in the emergency departments (EDs) showed that busy ED physicians are less likely to seek any additional information unless extremely accessible and of high priority. There is an indirect relationship between urgency and comprehensiveness. In an unpublished study conducted earlier by Dr. Lisa Schilling at The Children's Hospital, primary care physicians were much more likely (20 percent) to consider data or information missing than do ED physicians (2 percent). The initial CORHIO effort was to bring data to the ED providers. Through a focus group session, their primary data needs were electrocardiograms for adults and radiographic images for children. The POC system used what was available from the partners, where a few systems offered electrocardiograms and only radiology reports were available. Busy ED doctors found the process of login and query too time consuming, and maintenance of passwords too cumbersome. They wanted an automated interface that retrieves data without any thought or effort. However, auto-population of an electronic medical record with external data was not within the scope of the project.

While the process of aggregating data into usable information was shown to be feasible, the deployment within a busy ED environment might have shown less impact than other care environments would potentially show. The role of an ED physician is to make time critical decisions on a given acute issue. By necessity, these providers do not function as primary care physicians and thus do not review all parameters for chronic diseases or preventive health efforts. Their focus is instead only on the presenting complaint by the patient. Access to comprehensive data therefore may not be as critical in the ED care setting as it might be in others.

During interviews, several users described instances in which use of the POC system improved the quality or efficiency of care. The interface was intuitive but the patient search function could have been improved. The relatively short password lifespan of 3 weeks was a definite impediment to use. An area where CORHIO began to explore remedies was in trying to leverage another system's authorization and authentication procedure to identify a user within CORHIO. The security assertion markup language (SAML) is a tool that could support easier user access without the laborious password distribution process. An automated password reset function based on rigorous authentication procedures used within the federated environment should be explored for deployment. Rather than having an end-user initiate all data searches (i.e., login, confirm compliance with privacy/security, enter patient demographic information, confirm and select results from identity search, and then launch the data aggregation process) the process should be automated. For example, a registration admission/discharge/transfer message (e.g., a patient is now present at a partner institution) received by CORHIO could tell the provider if additional information has been found or even seamlessly incorporate it into the electronic medical record. Integration of CORHIO partner clinical information systems (e.g., automated patient search and then indication of available external data) would have markedly increased use. Ongoing promotion and support of the POC would also have kept service in the mind of potential users.

The iterative process of building policies required significant interaction between the technical workgroup and policy committee. To assure compliance with CORHIO policies, an online tutorial addressed training regarding system policy requirements, appropriate use, patient consent, and authentication standards had to be

completed by system users. Health information exchange privacy and security assurances including automatic auditing was a CORHIO requirement. These requirements preceded but are consistent with updated HIPAA regulations for health information exchange systems.

---

**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

**Business Goal:** Implementation and Use