A Statewide Data Repository for Population Analytics

William M. Reiter, MD
HealthShare Montana 2475
Village Lane, Suite 302
Billings, MT 59102
011-406-563-8600
wmreiter@reiterfoundation.org

Nicholas Anderson, PhD
Dept of Medical Education
Biomedical Informatics
University of Washington
011-206-685-0249
nicka@uw.edu

Aaron Abend, MBA
Recombinant Data Corp
255 Washington St, Suite 235
Newton, MA 02458
011-617-243-3700
AAbend@recomdata.com

In December, 2010 the Office of the National Coordinator for Health Information Technology (ONC) released a supplemental Funding Opportunity Announcement (FOA) as part of the Health Information Exchange (HIE) Challenge Program. The FOA encouraged "breakthrough progress for nationwide health information exchange in five challenge areas identified as key needs since Federal and State governments began implementation of the HITECH Act...Breakthrough solutions in these challenge themes will lead to the identification of more effective care delivery strategies, quality reporting, and surveillance for public health risks”.

HealthShare Montana (HSM), Montana's state-designated entity for health information exchange (HIE), in collaboration with the Institute of Translational Health Sciences at the University of Washington School of Medicine, Recombinant Data Corporation (RDC) and Covisint (HSM’s HIE infrastructure vendor) received an award in response to its proposal for Challenge Theme Five, Fostering Distributed Population-Level Analytics. The essence of the HSM Challenge Theme Five proposal is to adapt Informatics for Integrating Biology and the Bedside (i2b2) to build a research-focused data warehouse and analytic environment that will provide novel access to data in HSM's clinical data repository (CDR); the core element of the statewide HIE. Originally developed to provide a flexible and simple data query tool for researcher-driven translational research projects, i2b2 is a versatile open-source data integration framework that is being increasingly adopted across a wide spectrum of clinical and translational environments to support a range of end-uses associated with clinical data repositories.

The American Health Information Management Association’s (AHIMA) e-HIM Workgroup described several clinical data exchange models including a federated model with peer-to-peer exchange and a centralized model. The workgroup also suggested that differing HIE goals could best be accomplished by differing clinical data exchange models. HSM will use a hybrid model that centralizes the data categories and elements specified in the Healthcare Information Technology Standards Panel C32 Continuity of Care Document (CCD) standard.

The CCD standard uses Extensible Markup Language (XML) to specify the encoding, structure and semantics of a patient summary clinical document for exchange. It contains a core set of the most relevant clinical data about a person’s healthcare with associated metadata tags, and includes all of the data categories and elements recommended by the Health Information Technology Expert Panel in its 2008 report. A CCD-based model has the advantage of allowing clinical data providers to maintain local control of their operational systems and Service Level Agreements (SLA) while providing a centralized structure to separate and align policy requirements of the HIE with the research practice needs of the analytic research warehouse.

Clinical data from HSM's Mirth CDR5 is provided by Covisint and will be updated regularly in the HSM Clinical Data Trust (Data Trust), provided by RDC, and delivered through the i2b2-based research portal. Secondary analytic work of the Data Trust will therefore not affect the vendor SLA between HSM and Covisint. Unifying the systems is an “Honest Broker” environment that will support stewarded access to identifiable data and patient re-contact opportunities based on cohorts identified through the i2b2 HSM-focused analytic tools. This separation of operational data from research specific design and querying will allow effective researcher-focused creation of project-specific datamarts to support a range of secondary reporting and research uses.

In addition to having the HSM CDR as a statewide data source for Montana healthcare data, the Data Trust will serve as a data standardization and integration platform that can accept feeds from multiple other sources of aggregated data, as well as providing a reference platform for collaboration with other research efforts, such as those based on the Observational Medical Outcomes Partnership Common Data Model (OMOP CDM). This approach will create an evolving and dynamic analytic environment that will allow researchers to address and contribute to a diverse range of clinical research, patient-centered outcomes research, healthcare informatics research and population healthcare initiatives.

3 Ibid.
5 http://www.mirthcorp.com/community/overview
6 A Data Warehousing Strategy for Translational Medicine. AMIA Translational Bioinformatics Summit; 2008; San Francisco, CA.
7 http://omop.fnih.org/ETLProcess