



Texas Foundation Links 7.3 Million Patient Records for 136 Hospitals in Unique EMPI

The Dallas-Fort Worth Hospital Council (DFWHC) Education and Research Foundation

SITUATION OVERVIEW

CHALLENGE

- Develop a unique regional EMPI
- Modify standard model for data warehouse interface
- Link individual patient records for all facilities

SOLUTION

- QuadraMed Smart I/X®

RESULTS

- HIPAA and state standards met
- 7,364,432 records linked for 136 facilities

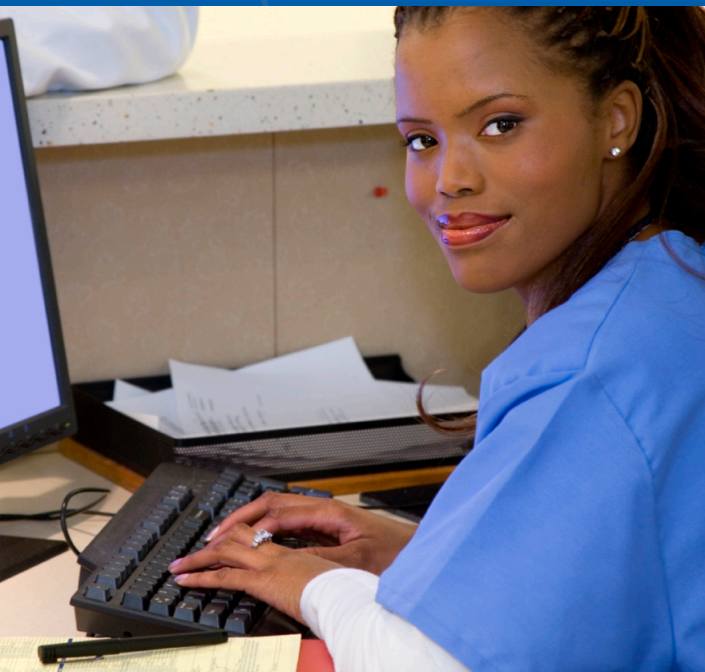
An Enterprise Master Patient Index (EMPI) is generally implemented by large healthcare organizations as a system for patient identity management across the enterprise. Such systems are designed to accurately identify, locate and manage patient records as a foundational component of the electronic medical record (EMR), and to detect and help prevent the creation of duplicate patient records.

Visionary groups, such as DFWHC are constantly searching to improve their quality of care, patient safety, and financial viability by creating innovative applications of healthcare technology. In the area of patient identity management, the Regional Enterprise Master Patient Index (REMPI) serving hospitals in North Texas takes innovation to a new level.

REMPI is the result of work begun in 2003 by the DFWHC Foundation to link the patient records of its participating hospitals. Typically, healthcare organizations interface an EMPI with their inpatient systems, enabling real-time data exchange and providing an EMPI that can be queried during patient registration to improve the linking of patient records across multiple facilities or systems.

However, the Foundation was seeking an EMPI that could be connected to its regional data warehouse via routine batch data loads from 136 facilities, and then use REMPI data to support quality and safety reporting, as well as research activities. Participating hospitals would not have direct access to the system, but instead would submit discharge data quarterly via secure file transfers.

This unique concept would require advanced identity management functionality and considerable system flexibility. The solution was developed in partnership with QuadraMed to implement the company's Smart Identity Exchange (Smart I/X) EMPI technology to bring REMPI from concept to reality.



BACKGROUND

The DFWHC is a 71-member not-for-profit trade organization headquartered in Irving, Texas. For 40 years, DFWHC has been dedicated to continually improving the region's patient safety and quality of care. One of its subsidiaries is the tax-exempt DFWHC Education and Research Foundation, established in 1997.

"Our mission is to answer a growing need in the healthcare community for high quality, standardized data," said Foundation President Kristin Jenkins, JD, FACHE. "In turn, our members and research organizations can use the data to measure value, facilitate evaluation of healthcare quality and promote quality improvements." Data collection, analysis, education and general consultation are provided by the Foundation's Information and Quality Services Center (IQSC), which oversees REMPI implementation, utilization and growth.

In addition to the 71 members of the DFWHC, the IQSC collects information for its data warehouse from rural hospitals in the region, bringing the total number of facilities participating in the REMPI initiative to 136. The North Texas Healthcare Information and Quality Collaborative is a committee that provides subject matter expertise related to quality, patient safety and the development and utilization of the data assets such as REMPI, to support the strategic goals and tactical activities of the Foundation.

DFWHC FOUNDATION AT A GLANCE

Number of REMPI participating hospitals: **136**

Coverage area: **17 counties in Dallas-Fort Worth area**

Annual inpatients: **775,000**

Annual outpatient ED visits: **1.5 million**

Annual outpatient surgeries: **325,000**

MAKING REMPI A REALITY

In 2006, the Foundation moved to identify an EMPI vendor that could provide the software and technical services with the capability to support REMPI. QuadraMed was selected after demonstrating commitment to the project, and its status as the only vendor to fully meet a requirement to participate in a proof-of-concept using a year's data from the IQSC warehouse.

The DFWHC Foundation worked in partnership with QuadraMed to implement the company's Smart I/X, next-generation EMPI. Smart I/X fully supports IHE PIX and PDQ integration profiles, and is certified on IHE Connectathon transaction sets. The system incorporates the QuadraMed SmartPAL® proprietary probabilistic patient matching algorithm, recognized as the industry's most accurate methodology for record matching to link patients within and across entities.

After an initial MPI cleanup was performed on records in the data warehouse, the Smart I/X Auto-Linking feature was programmed with special rules to assign Enterprise ID (EID) numbers using SmartPAL that would ensure each patient had only one EID to facilitate effective use of the records contained in the data warehouse.

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*Kristin Jenkins, JD, FACHE,
President, DFWHC Foundation*

case study

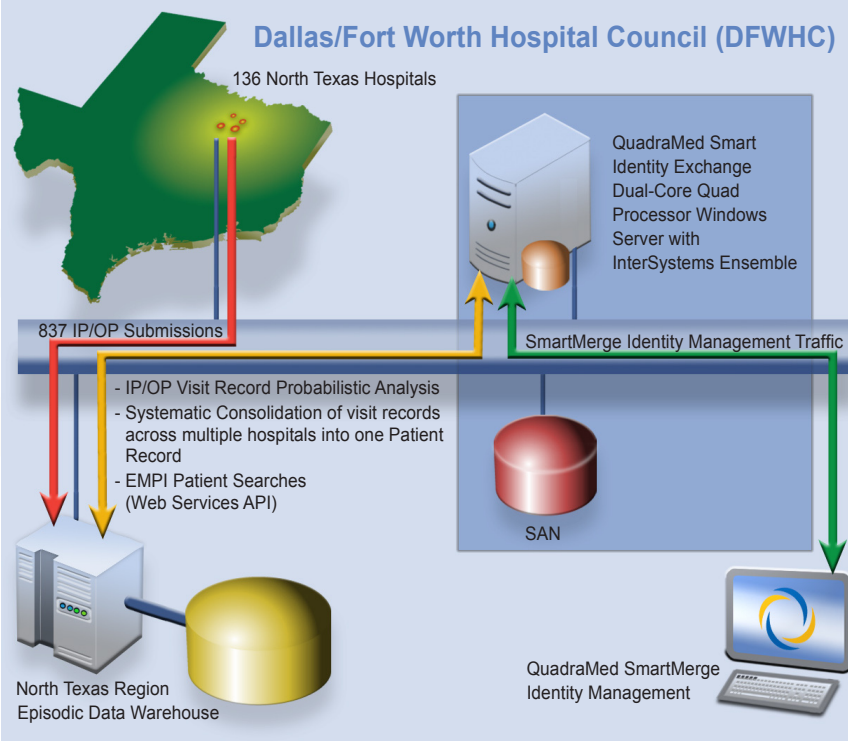
DFWHC EDUCATION AND RESEARCH FOUNDATION [continued]

These special rules were key to the success of the matching algorithm because they were custom-built to account for the uniqueness of an administrative claims data warehouse, such as that of the IQSC. For example, ten base rules exist for inpatient-inpatient matching that *automatically* manage “no social security number” matches, “relationship between mother-baby” matches, and “minor variations between date of birth” matches. Others exist for the inpatient-outpatient matching to account for variations in outpatient data fields.

“REMPI is a different model than the standard EMPI system,” said Mari Tietze, PhD, RN-BC, Director of Nursing Research and Informatics, who serves on the IQSC REMPI project. “We don’t talk about duplicate records, because we’re *not* trying to merge records like a hospital. Because we begin with records that were optimally matched by each hospital, we talk about matches among Hospital A and Hospital B records, and then among Hospital B and Hospital C and so on.”

REMPI receives claims data from the participating entities. That data is visit-centric, with no way to look at all of the visits for a given patient within or across entities. Smart I/X then enables REMPI to link all of the visit data to one EID number to create a patient-centric view for research and reporting.

“IQSC and QuadraMed developed a set of Auto-Linking rules to identify whether or not a patient is the same person from hospital to hospital,” Mari Tietze continued. “REMPI assigns an EID number to the medical record or records of each individual. These numbers equal the number of patients receiving care; therefore, each patient has a single number on top of all of their individual records from every participating hospital. This enables us, for the first time, to aggregate and customize an unlimited amount of de-identified claims data at the patient level, rather than just the encounter level.”



Smart I/X can be deployed on a single server, yet is scalable to support a distributed architecture.

The de-identified information provided to participating hospitals and research organizations prevents the data from being tied to specific patients. This safeguards patient privacy and adheres to the stringent confidentiality standards of HIPAA and Texas state requirements, while providing a comprehensive patient-centric view of data that can be used to evaluate and improve care and outcomes across the region.

CONTROLLING READMISSION RATES

One of the best examples of how participating hospitals can use REMPI to provide real value is to study and ultimately improve their readmission rates. Index hospitals, such as those that provide initial inpatient treatment as defined by the Centers for Medicare and Medicaid (CMS), may suffer claims reimbursement denials if patients are readmitted.

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“Index hospitals are trying to control their readmission rates because if a patient is readmitted by another facility within 30 days, the index hospital’s claim may be denied,” said Mari Tietze. “The data REMPI provides facilitates data analysis allowing for hospitals to be more actively involved with their patients as they consider operational changes aimed at decreasing readmissions.

“Take patients with heart failure problems, for example. One CMS-sponsored study reported that between 2005 and 2008 almost one in four of these patients was readmitted within 30 days.¹ CMS provides this and other similar reports without the patient detail that is critical to the improvement process such as comorbidities, attending physician, overall inpatient admission pattern and overall emergency department visit pattern. The IQSC REMPI data helps to answer questions concerning the characteristics of patients experiencing readmissions, which helps the hospital to predict readmissions and intervene to prevent them.”

Studies have shown that readmission rates improve when patients receive post-discharge, in-person support on: medication self-management; recording of health status; follow-up with their primary practitioner; and red flags to look for if their condition is worsening.^{2,3}

Using Smart I/X, REMPI has the capability to provide cost-effective data about the pattern of a patient’s admissions — information that was previously held solely by CMS. But unlike CMS, REMPI contains claims data for all payers, not just Medicare.

REMPI TODAY AND TOMORROW

More than 7.3 million records dating from 2003 forward for 136 healthcare facilities in the 17-county Dallas-Fort Worth area have been linked as of 2009. During the first quarter 2010, REMPI participating hospitals and research organizations will have comprehensive inpatient-to-inpatient data available, including readmission rates for Acute Myocardial Infarction, Congestive Heart Failure, and Pneumonia.

Outpatient data for Emergency Departments have also been collected and will be available in 2010. This will help the system evolve and provide reports and data mining opportunities across the continuum of care. Overall, REMPI will be used to:

- Link inpatient to outpatient hospitalization encounters
- Link multiple outpatient encounters
- Calculate 30-, 60-, and 90-day readmission rates
- Develop episodic metrics and analytic capability to evaluate chronic illness models for congestive heart failure, pneumonia, and other identified chronic illnesses

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case study

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- Link research data for cardiovascular, stroke, and chronic diseases to the inpatient and outpatient databases
- Support research activity to improve healthcare delivery
- Improve patient safety and quality care initiatives
- Track infections and other complication rates
- Track distance from the hospital to the patient's home address
- Track survival via Medicare Death Master file
- Trend admitting and operating physician by name


Other uses for REMPI data include utilization as a patient record, linking claims methodology for a Regional Healthcare Information Exchange. Because Smart I/X conforms to IHE profiles, REMPI can be expanded to manage health information exchange at a future time. Its flexibility has also led the Foundation to consider nationally funded research opportunities.

“The system's development is very fluid,” said Kristin Jenkins. “From inpatient data we move to the emergency room, then to observation and imaging, ambulatory surgery and so forth into the future.”

“There are many organizations interested in using this type of information to conduct research into what is working to keep people healthy and out of the hospital. Studies like this, and a number of

REMPI is the first fully functional, comprehensive regional EMPI. QuadraMed Smart I/X offers other organizations in need of an EMPI with record-linking capability an opportunity to achieve similar results.

others are already using our data to determine which models will work to improve the health status of people with chronic conditions and which will not,” she concluded.

REMPI is the first fully functional, comprehensive regional EMPI in North Texas. QuadraMed Smart I/X offers other organizations in need of an EMPI an opportunity to achieve similar results. Conformance to industry IHE standards and the high performance InterSystems CACHÉ database and Ensemble interface engine enable EMPI growth and participation in health information exchange. With the accuracy of its SmartPAL probabilistic patient matching algorithm and unmatched technical support, Smart I/X gives large healthcare organizations an EMPI backed by proven identity management performance and more than a decade of research and development. 

For more information about QuadraMed's Smart I/X solution, contact your account representative.

¹ Krumholz, H.M. et al. (2009). Patterns of hospital performance in acute myocardial infarction and heart failure 30-day mortality and readmission. *Circ Cardiovasc Qual Outcomes*, www.circoutcomes.ahajournals.org.

² Brock, J. and Jencks, S. (June 2008). CMS targets readmission through payment, audits; ‘Coaching’ model reduces rates. *Report on Medicare Compliance*; 17 (24).

³ Sochalski, J., Jaarsma, T., Krumholtz, H.M. et al. “What Works in Chronic Care Management: The Case of Heart Failure,” *Health Affairs*, January/February 2009 28(1):179–89.