

# A decade of interoperability success

/Case Study



UPMC has a history of finding and developing innovative technology solutions to improve the delivery of patient care. One example of this is demonstrated by its efforts to help develop the dbMotion suite of interoperability solutions. One of the largest health systems in the United States, UPMC sought to bring together disparate HIT systems to improve clinical decision making at every patient encounter. UPMC's vision and approach enabled it to connect with surrounding health systems, health information exchanges (HIEs), remote hospitals and the UPMC Health Plan.

## Harmonizing data for a massive health system

When launching an interoperability project in the mid-2000s, the UPMC team recognized it needed a solution that could work with multiple electronic health record (EHR) systems.

UPMC adopted a multi-EHR platform approach with Cerner in the inpatient areas and Epic in the ambulatory areas. "We needed to find a way to make these systems talk with each other," Director of Interoperability Diane Michalec, MSN, RN, said. "Software engineering consultants recommended that we find a solution with strong capabilities in data harmonization."

UPMC began working with dbMotion on a joint venture to develop a solution that would power a patient-centered record across the organization. The UPMC Interoperability platform went live in February 2008. It enabled tight connectivity to Epic, Cerner and Varian, as well as about 45 additional source systems.

## Client Profile

UPMC

Headquarters: Pittsburgh, PA, U.S.A.

### OVERVIEW

- Integrated healthcare enterprise
- >30 hospitals, >600 doctors' offices and outpatient clinics
- 4.2 million outpatient visits annually
- 840,000 Emergency Department visits annually
- >700,000 home care visits
- 310,000 inpatient admissions and observation cases annually
- UPMC Health Plan has 3.2 million members
- UPMC International has established partnerships in China, Kazakhstan, Ireland and Italy
- Founding member and service provider for ClinicalConnect HIE
- UPMC Enterprises creates products and business that make life-changing medicine happen

### ALLSCRIPTS SOLUTIONS

- dbMotion™ Solution
- dbMotion™ Clinical Viewer
- dbMotion™ EHR Agent



#### Improving care decisions

A UPMC survey found that two out of three clinicians report that accessing comprehensive patient data changed care decisions



#### Access to complete patient data

UPMC clinicians access the interoperability patient record an average of 125,000x per month

78

#### Integrated multiple data sources

UPMC has 78 systems contributing data and 133 interfaces with dbMotion

8.3

#### million unique patient records

Manages a comprehensive lifetime record of care for patients across western Pennsylvania



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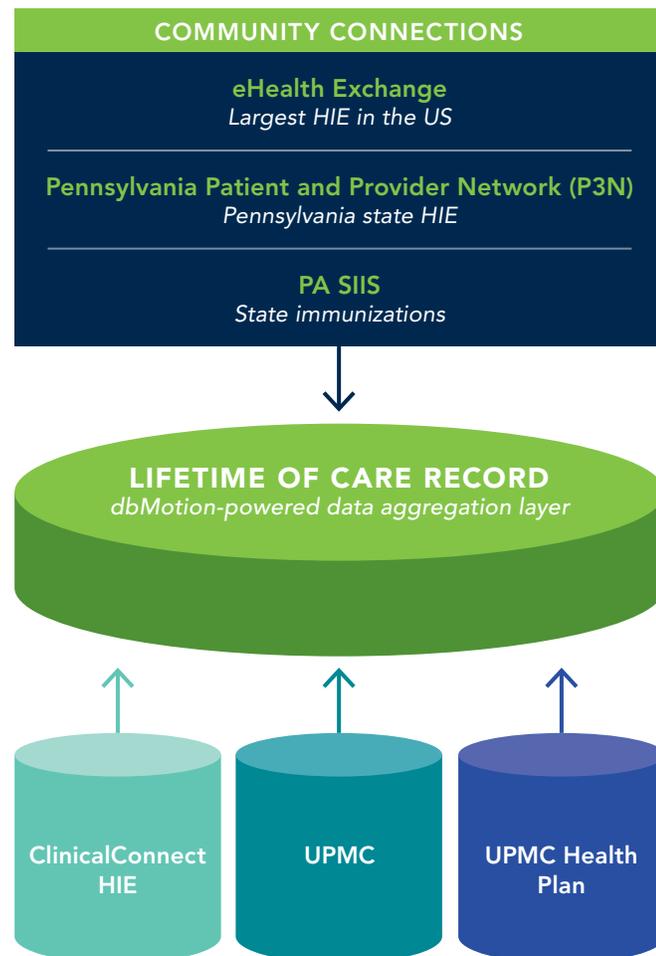
"An interoperability workflow needs to be seamless for providers... We're moving into a world where the clinicians can have too much data presented to them, which doesn't work when they need to focus on patients."

Diane Michalec, MSN, RN, UPMC  
Director of Interoperability

## Three systems, one seamless user experience

Senior Manager of Interoperability Sandra Sentner-White explains that "The application composed of three separate instances of dbMotion. One that aggregates all UPMC clinical information. A second system houses the clinical claims information for the UPMC HealthPlan," she said. "UPMC hosts and shares the same platform for Pennsylvania's HIE, called ClinicalConnect HIE. The Western Pennsylvania ClinicalConnect HIE is a separate entity that began in 2011." These three systems integrate to create a seamless single system experience for the users.

Data exchange went live among ClinicalConnect HIE members in June 2012 and currently integrates data for its member organizations: 11 hospitals or healthcare systems (one of which is UPMC), one Federally Qualified Health Center (FQHC), two independent physician practices, three skilled nursing facilities and one pediatric rehab facility.



"Leaders of six area hospitals and UPMC came together to form ClinicalConnect HIE for the good of the community, which is how ClinicalConnect HIE was born," ClinicalConnect HIE Client Services Manager Laura Mosesso said. "Because UPMC had already proven that dbMotion could aggregate data from multiple sources, ClinicalConnect HIE implemented its own instance of dbMotion to aggregate data across all our HIE Member organizations."

Distinct databases enable the three organizations to meet legal requirements for data storage and more precisely manage user permissions. "We can manage which users can access which sets of data, and this structure makes it easier to do that," Systems Analyst Expert Suzann Bridge said.

The databases share information through federation. "The end users don't see any of the technical separation," Michalec said. "To them it's all just CCHIE, and it's seamless."

Mosesso agrees that dbMotion presents aggregated data in a usable, meaningful way to clinicians. "ClinicalConnect HIE is bringing data to UPMC from all the other HIE organizations, it doesn't matter who the source is...the fact that, for example, they can see all medications for their patients across a multitude of data sources is very valuable to providers."

## UPMC providers find immeasurable value

With a robust interoperability solution, providers have quick access to more complete information about the patient – such as allergies, medications, lab results, past hospitalizations, and other data important to clinical decision making. UPMC assigns dbMotion accounts to clinicians and other users, including, but not limited to, registration team members, infection control staff, pharmacists and social workers.

"From a clinical perspective, the value that an interoperability platform brings is immeasurable...it's huge in preventing duplication of care, treatment and services," Informatics Nurse Nancy Gorsha said. "Back in the day in the emergency room, if a patient came in and needed a CT scan, we always just did one. Now we can launch the interoperability solution, check for recent CT scans, review existing results and decide if the patient really needs one or not."

Gorsha reports unexpected benefits of making an interoperability solution available to a wide range of users. "Physicians are clinical decision makers, but information gatherers are everywhere," she said. "One of the most interesting examples can be found in the Emergency Department at UPMC's Childrens' Hospital. A staff member from the UPMC Injury Prevention Center reviews information found in CCHIE to determine if there might be a commercial product that contributed to, or was responsible for, the incident that brought the patient to the UPMC Childrens' Hospital Emergency Department."

UPMC conducted a survey in April 2016 to evaluate what information clinicians found most useful. "Clinicians use dbMotion for many reasons, some of the top reasons include finding lab results—and being able to trend those over time, which they can't do in the EHR," Michalec said. "All types of providers are finding it useful in ways we couldn't have predicted."

Access to this data influences care delivery. A 2012 UPMC survey revealed that two out of three providers reported the data they see in dbMotion directly affects clinical decision making and helped determine their plan of care.

## Outcomes

- UPMC survey finds two out of three clinicians report that accessing comprehensive patient data changed care decisions
- 14,000 UPMC users access the clinical record 125,000 times per month
- UPMC has 78 systems contributing data and 133 interfaces with dbMotion
- Vocabulary statistics:
  - 62% overall mapped to baselines
  - 90% mapped to baselines based on frequency of codes
  - Goal: To map 100% of mappable codes Integrated healthcare

*"From a clinical perspective, the value that an interoperability platform brings is immeasurable...it's huge in preventing duplication of care, treatment and services."*

Nancy Gorsha,  
UPMC Informatics Nurse

*"Within its first five years, ClinicalConnect HIE enabled users across western Pennsylvania to launch dbMotion from their home EHR system more than 1.1 million times."*

Laura Mosesso, ClinicalConnect HIE Client Services Manager

## What's next for UPMC

Though UPMC is no longer a joint venture partner with dbMotion, it will soon celebrate its tenth anniversary of using the solution it helped develop. The interoperability team continues to find ways to add value, including, expanding integrations with health data exchanges, deeper integration of the data into the clinical users workflow and exploring secondary use of the data.

"Our growing focus is connecting to other state and national HIEs," Sentner-White said. "We have four active connections now and we're looking forward to creating more of those."

UPMC relies on Allscripts as a trusted partner. "We can really work with Allscripts to solve issues when they come up," Bridge said. "We still have input with the solution, and our input is valued...we can bring clinical perspectives and know that dbMotion will meet those needs."



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