CENTER FOR
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**Innovation Pilot Summary: Matching Clinical and Claims Data for Cost and Quality Measurement**

**The Project:** The Health Collaborative initiated this project as part of their efforts to improve the accessibility and timeliness of quality and cost data. The Health Collaborative leads a voluntary public reporting and performance measurement initiative called YourHealthMatters (YHM). To date, they have relied on labor intensive, multiphase processes to collect data for public reporting. The Health Collaborative believes that as the healthcare industry more widely adopts value-based payment systems, it will be essential to measure value efficiently and reliably.

**The Process:** The Health Collaborative used clinical and claims data provided by a Cincinnati-area integrated healthcare system to design a scalable technical solution to integrate claims and clinical information at the patient-level. The criteria for the solution were standards-based data, measures, open source components, and commercially available software.

**The Solution:** The Health Collaborative collected over 400,000 Continuity of Care Documents (CCDs) from providers. The default CCD output provided a broad set of data types such as laboratory tests (including values), medications, and care plan goals across many types of encounters including hospitalizations, home visits, and office visits. At the close of each encounter the electronic health record (EHR) system automatically sent a CCD using DIRECT XDM/XDR protocols to a single DIRECT address, which was then sent to The Health Collaborative's DIRECT solution, MirthMail. The MirthMail solution was modified to copy all CCDs to a secure file location, where they could be used for later processing. The claims data arrived in flat file format and was transmitted from the health plan to Health Collaborative via sFTP. The CCDs and claims files were entered into IBM's Master Data Management (MDM). The IBM MDM used both deterministic and probabilistic matching for master patient, provider, and organization indexing. The Health Collaborative used popHealth® to import CCDs, electronic clinical quality measures (eCQM), definitions, and to calculate several diabetes care quality measures. Finally, The Health Collaborative used the list of patients that were included in the denominator of the Diabetes A1C Poor Control (>9.0) measure and calculated the total cost of care for each patient, and attributed these patients to a practice (Table 1).

**Table 1. Cost and quality measures by practice, by blood sugar control category**

| Location | Count of Patients with HBA1C > 9 | % of Patients with HBA1C > 9 | Average Cost Per Patient with HBA1C > 9 |
|---|---|---|---|
| **Clinic A** | 1 | 2% | $1,346.68 |
| **Clinic B** | 2 | 4% | $1,031.97 |
| **Clinic C** | 4 | 10% | $5,526.19 |
| **ALL CLINICS** | **7** | **5%** | **$3,645.05** |

**Key Solution Takeaways:**

- A measurement system instead of a system of measures
- Correlates quality of care with cost of care for a particular patient population at the practice-level
- Broadly applicable to other regional collaboratives with almost all freely available software tools
- Resource requirements are significantly lower than current manual methods
- CCDs provided a broad set of data allowing drilldown and application of multiple eCQMs at one time
- Practices did not need to participate in data collection
- Successful calculation of measures using popHealth®

**Figure 1. Overview of technical flow of data**