Using A Data Warehouse and Analytics to Drive Population Health Management

HEALTHCARE ORGANIZATION
Large Medical Center

TOP RESULTS

- Enabled pay-for-performance (P4P) incentive payment reporting
- Established 48 analytical healthcare measurements
- Integration of PAM scores to promote patient engagement and enable shared decision making
- Plan to roll out to 100% of clinics, affecting an estimated 50,000-plus patients

PRODUCTS

- Late-Binding™ Data Warehouse
- Cohort Builder
- Population Health Advanced Application
- Installation Services
- Analytic Visualization Solutions

SERVICES

- Installation Services
- Clinical Improvement Services

"Population health management and the ability to provide pay-for-performance reporting are key strategic initiatives for our organization. We set an aggressive goal with Health Catalyst® and made a commitment to roll out the Population Health Advanced Application within eight weeks. They met that commitment and astounded the primary care physicians."

Director, Clinical Business Analytics

Client Background

The emerging "pay for value" reform era has left healthcare organizations struggling to compile and structure the immense quantities of data required for success. While electronic health records (EHRs) provide the raw clinical data for many large hospitals and physician practices, making that data accessible and usable – and reporting on the outcomes – remains a puzzle for most. This large medical center had been struggling for two decades just to overcome the basic problem behind that puzzle — how to establish a baseline so that improvements in performance can be substantiated.

The solution to both problems, it turned out, was a Late-Binding™ enterprise data warehouse (EDW) featuring the Health Catalyst® Cohort Builder and the Health Catalyst Population Health Advanced Application.

Why a Late-Binding™ Enterprise Data Warehouse?
The medical center had previously implemented a traditional "early-binding" EDW, the kind common in other industries. But the software couldn't deliver the near-real-time analysis of clinical data required for success under value-based models such as risk-based contracting and accountable care organizations (ACO). The medical center asked Health Catalyst to deploy its Late-Binding™ Data Warehouse platform, a breakthrough in accelerated data capture that can be implemented in a matter of weeks, not months or years.

Client Story
Dovetailing with Early Efforts
When the Health Catalyst data warehouse was launched, the medical center initially focused on improving its ability to analyze and better manage a specific patient population: individuals with heart failure (HF). Clinical leaders developed evidence-based best practice interventions specifically for these patients, and dashboards were created in the EDW platform so the impact of each intervention could be easily visualized.

Having achieved successful results in this initial endeavor, the organization decided to deploy the EDW and quality intervention process within an ambulatory population health management pilot for employees and their dependents. It also called on

Health Catalyst to create an EDW-powered population health analytics dashboard that stratifies risk for nearly a dozen other conditions besides HF, identifies care gaps and implements risk measures to improve population health outcomes.

The population health initiative was deployed in March 2013. Within just eight weeks, 10 percent of the medical center's clinics were actively utilizing the dashboards to support care delivery for approximately 2,300 patients. The medical center is well on its way to achieving its goal of rolling out the program to 100 percent of the center's primary care and coordinated care clinics, with a potential impact on more than 50,000 patients.

"Population health management and the ability to provide pay-for-performance reporting are key strategic initiatives for our organization," said the medical center's director of clinical business intelligence. "We set an aggressive goal with Health Catalyst and made a commitment to roll out the Population Health Advanced Application within eight weeks. They met that commitment and astounded the primary care physicians."

Tracking Care Provided and Care Needed, At a Glance
When the Health Catalyst data warehouse was launched, the medical center initially focused on improving its ability to analyze and better manage a specific patient population: individuals with heart failure (HF). Clinical leaders developed evidence-based best practice interventions specifically for these patients, and dashboards were created in the EDW platform so the impact of each intervention could be easily visualized.

Separate EDW dashboards were created to allow administrators and clinicians to easily navigate volumes of data specific to either patients enrolled in coordinated care or those seen at a primary care clinic.

The coordinated care facet of the population health initiative targets patients who consume the top 10 to 20 percent most expensive care at the medical center. Its primary goals are:

> to reduce the frequency of health crises, emergency department visits and avoidable hospitalizations (both initial admissions and readmissions)

> to reduce the cost per service through the provision of team-based care (teams may include physicians, RNs, health coaches, social workers, physical therapists and behavioral health professionals)

> to improve the patient experience, in part by improving access to care

> to enable patients to better manage their own health

To promote patient engagement and gauge the extent to which these chronically ill patients feel empowered to self-manage their health and participate in the decision-making process, clinical leaders championed the integration of a metric known as the Patient Activation Measure, or PAM score, into the EDW. This assessment evaluates a patient's knowledge, skills and confidence level with regard to managing his or her health.

The coordinated care dashboards make it possible for physicians and care coordinators to quickly identify care gap measures that signify when patients are in

need of outreach efforts. Risk levels are stratified by color, based on the patient's current status (red, yellow or green). Administrators can also use the dashboards to attain risk summaries for a given patient population and evaluate risk measure-level data by specific health conditions. Panel views can be sorted and filtered in various ways, such as by care teams, clinicians and patients.

On the primary care side, the emphasis is on preventive care measures. Physicians can use the EDW dashboards to determine which patients are in need of preventive care services and track the number of patients who do or will need screenings for a range of conditions. Administrators can track performance at the provider, department or location level to assess compliance rates.

Reporting Success
Having all of this data readily available in an organized, easy-to-access format has been beneficial to patients, physicians, clinical staff and administrators — and at long last, the medical center has been able to establish a baseline it can use in P4P incentive payment reporting.

"What we've accomplished with population health is something we've been trying to do for over 20 years with our various clinics," said the director of clinical business analytics. "We used to manually pull together reports, all with varying data, and we had no way to proactively monitor our populations. Now, we have near real-time data that enables our care coordinators to drive preventive care and ultimately lower our population health costs.

Looking Ahead
The organization plans to incorporate additional features such as predictive analytics and weighted risk scoring into the EDW. Claims data and patient satisfaction data will be integrated into the program along with the existing EMR data, similar to what was done with the HF program, which will further assist the enterprise in its reporting capabilities and its efforts to reduce costs, improve outcomes and enhance the patient experience.

Sample Population Health Advanced Application Dashboard

1. Panel view across all providers and patients as well as at the individual level

2. Composite and individual scores-Easy to understand dial gauges

3. Multitude of drill downs including date, location, department and more

4. 48 analytical measurements-customizable, with the ability to easily add more
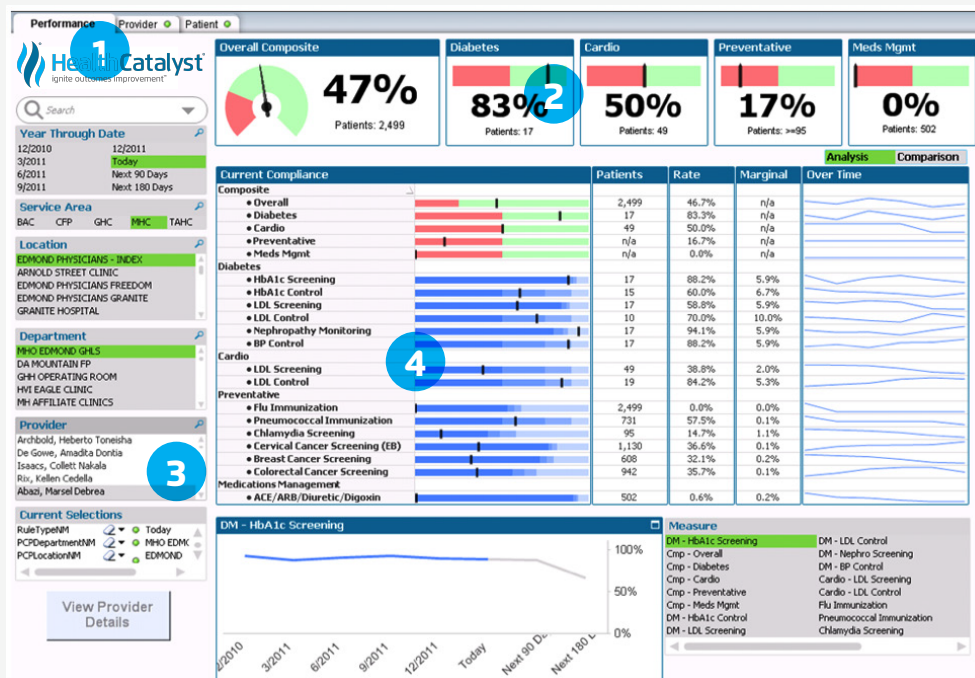
Proactive preventative care tracking

1. **Panel view** across all providers and patients

2. **Count** and status of patients

3. **Easy visualization** of patients who are need preventative treatment

About Health Catalyst

Health Catalyst is a mission-driven data warehousing, analytics, and outcomes improvement company that helps healthcare organizations of all sizes perform the clinical, financial, and operational reporting and analysis needed for population health and accountable care. Our proven enterprise data warehouse (EDW) and analytics platform helps improve quality, add efficiency and lower costs in support of more than 50 million patients for organizations ranging from the largest US health system to forward-thinking physician practices.

For more information, visit www.healthcatalyst.com, and follow us on Twitter, LinkedIn, and Facebook.