

Population Registries Kick-start Rapid-cycle Clinical Process Improvement



Texas Children's Hospital®

HEALTHCARE ORGANIZATION

Children's Hospital

TOP RESULTS

- 85% faster development of clinical process improvement projects
- Starter kits with clinically defined cohorts and evidence-based practice guidelines
- 65+ healthcare analytical measurements in each population registry
- Customizable, drill-down data visualization

TEXAS CHILDREN'S HOSPITAL (TCH)

is one of the premiere children's hospitals in the United States. In an industry shifting to value-based care delivery models, TCH is focusing on quality improvement, data management and its ability to manage high-risk populations of patients. Although long committed to using technology and data to drive high-quality, evidence-based care, TCH, like many organizations, struggled with cumbersome processes for analyzing populations, defining patient cohorts and implementing improvement programs that drove measurable and sustainable improvement.

By partnering with Health Catalyst and rolling out the company's Late-Binding™ Enterprise Data Warehouse (EDW) and advanced analytics

applications, TCH has overcome barriers to process improvement and has embraced a methodology for rapid-cycle process improvement.



Dr. Charles Macias

TCH Attending Physician
 Director, Evidence Based
 Outcomes Center

“Catalyst understood what we needed to put in place—not just to get the data but to turn it into something meaningful. Their team is skilled at recognizing what we do well, capitalizing on those strengths and then working with us to determine how to best fill in the gaps.”

Dr. Charles Macias, Attending Physician
 Director, Evidence Based Outcomes Center

TEXAS CHILDREN'S COMMITMENT TO EVIDENCE-BASED PRACTICE

TCH had an established a formal entity, the Evidence Based Outcomes Center (EBOC), that was spearheading its efforts to make clinical practice consistent with the best medical science throughout its facilities. The EBOC develops evidence-

PRODUCTS

- Late-Binding™ Data Warehouse
- Foundational Applications
- Discovery Applications

SERVICES

- Installation Services
- Clinical Improvement Services

based clinical guidelines designed to help TCH clinicians manage the complexity of care and minimize variations in clinical practice—which results in improved quality. A multi-disciplinary team of experts at the EBOC develops the guidelines, which are then implemented into clinical practice.

The EBOC is tasked with:

- Identifying areas for quality improvement
- Assembling the right team to address guidelines for the targeted patient population
- Rigorously examining the latest clinical evidence
- Systematically creating guidelines with embedded recommendations and soliciting feedback from its community of clinical care users
- Teaming with clinical departments to roll out evidence-based guidelines to the broader clinician population

Developing clinical program improvement programs and implementing them in a systematic manner that yielded rapid results proved to be a challenging task.

EBOC TIME-TO-VALUE PROBLEM

TCH had implemented an electronic health record (EHR), which contained a wealth of data. But hospital leaders found that the data didn't meet clinicians' expectations for usefulness. It was the EBOC's task to mobilize the usefulness of the Epic implementation as it related to guidelines driven care—to analyze the data, create and support evidence-based guidelines and deliver actionable information to clinicians.

Despite a clear mission, an enterprise-wide EHR implementation and solid organizational support, efforts to use the data were slow and inefficient. Even for improvement projects with a very limited scope, it would take the EBOC as many as six months to develop and kick off clinical program improvement projects—and even more time to determine whether the initiative was yielding positive results. EBOC teams had to collect data from hospital systems, cobble together reports to evaluate the data, define patient cohorts, analyze baseline data, address data quality issues and establish target metrics—all using time- and resource-consuming manual methods.

TCH needed technologies and methodologies that would enable them to integrate data management, science through evidence—and then to effectively incorporate the evidence base into everyday clinical practice. These resources would enable them to unlock the potential of their data, provide transparency to providers and mobilize clinicians to embrace quality-improvement initiatives.

THE HEALTH CATALYST SOLUTION: DATA WAREHOUSE AND REGISTRIES

TCH's EBOC turned to Health Catalyst for a solution. Catalyst's healthcare enterprise data warehouse (EDW) and analytics applications that deliver patient registries and measurements has enabled the hospital to realize a significantly faster time to value for its clinical program improvement initiatives.

The Solution's EDW Foundation

“Rapid retrieval of relevant data is the most important benefit Health Catalyst’s solutions have delivered. Today, I can look up in a matter of seconds information that took me months to find in the past—if it was available at all. This night and day difference is so revolutionary, I feel like I’ve lived through the discovery of electricity.

Dr. Charles Macias
Attending Physician
Director, Evidence Based
Outcomes Center

TCH’s first step in creating an analytic framework to increase the usefulness of their data was implementing Health Catalyst’s Late-Binding™ EDW platform. The EDW integrates data from source applications—clinical, financial and more—and makes it available for reporting and analysis. Designed specifically for healthcare, the EDW incorporates a late-binding data model—an agile approach that assembles data from source applications just in time to address new analytic use cases.

With the data aggregated for analytics purposes, EBOC no longer had to cobble reports or manually analyze data. The team was able to efficiently identify areas with the most potential for quality improvement. Rather than needing six months to develop a clinical improvement initiative, EBOC could define patient cohorts, analyze baseline data, address data quality issues and define targeted improvement goals in 90 days.

But this 50 percent improvement in process time was just the beginning. By subsequently implementing the Population Explorer application to run on the EDW, TCH was able to far outdo even that distinct improvement, reducing the time to just 2 weeks.

Foundational Application: Population Explorer

Population Explorer, a foundational analytics application that runs on Health Catalyst’s EDW platform, is designed to accelerate development of clinical program improvements by delivering starter sets that consist of registries and a library of commonly defined measures. The EBOC team has leveraged 45 registries to date. Each of the registries, on average, includes 65 healthcare analytics measurements.

Population Explorer Benefits for EBOC

In addition to the registries and library of measures, Population Explorer provided EBOC with:

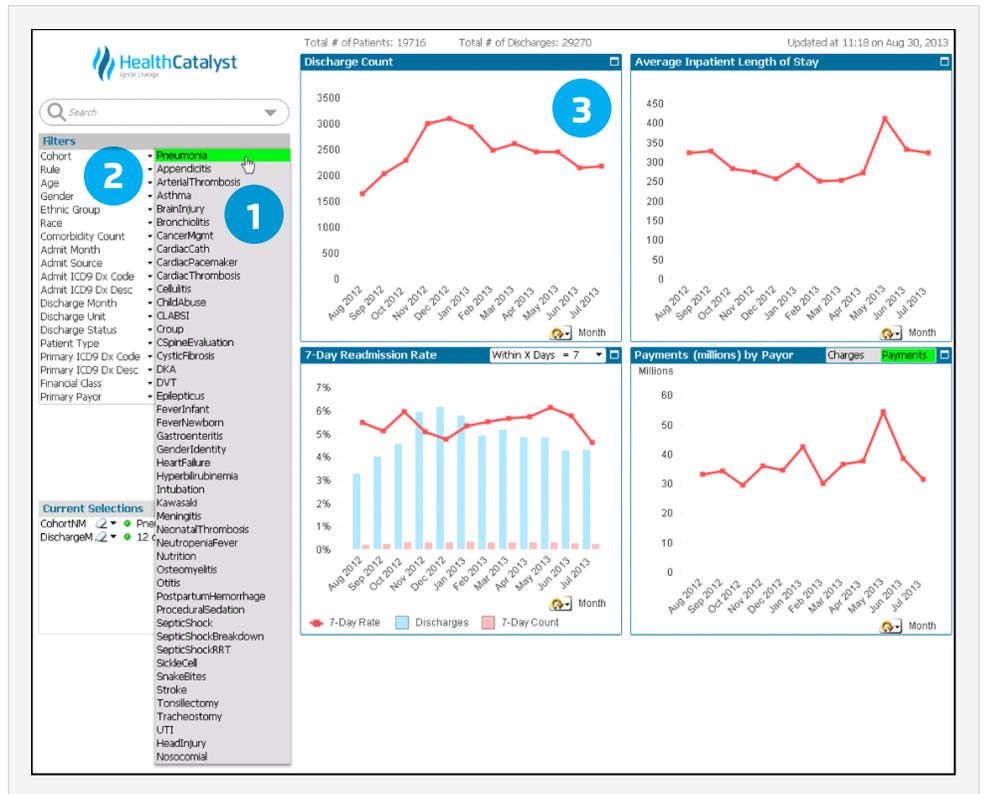
- A tool and platform upon which additional populations can be rapidly developed across the organization. The clinical improvement teams no longer had to start from scratch to define a target patient population. Instead, the team could identify and scope short-term and future projects quickly—a significant factor in reducing the time required to develop new clinical program improvement initiatives.
- Early identification of potential high-level data quality issues, such as missing data and inconsistent documentation. Data quality issues that are identified and addressed early help reduce the overall AIM definition project phase timelines.
- More than 65 healthcare analytical measurements for each of the population registries. Each registry included a common set of measurements—such as diagnosis, length of stay, case counts, demographics and readmission rates—that enabled the clinical improvement teams to view metrics about individual patient populations. In addition to these common measurements, each registry featured custom measurements based on labs, flow sheet data, vital signs, medications and other data appropriate to the registry.
- Customizable drill-down data visualizations. Rather than having to sift through data and cobble together reports, EBOC teams received actionable, timely insights through a variety of data visualizations. The Population Explorer dashboard enabled EBOC to drill down easily to the specific patient level.

CONCRETE RESULTS: RAPID-CYCLE PROCESS IMPROVEMENT

Health Catalyst's EDW and Population Explorer application has delivered impressive, measurable results to TCH. **TCH's EBOC has reduced the time required to develop clinical program improvement projects by 85 percent.**

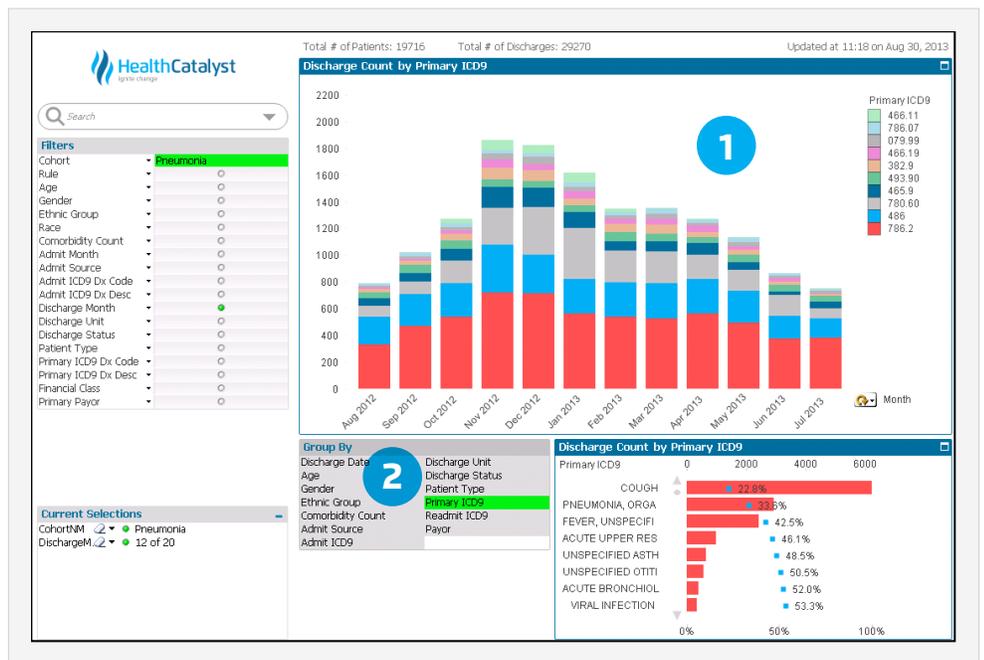
Population Explorer Visualization I

1. **Patient registries** with a library of healthcare analytic measurements.
2. **Filters** that enable quick sorting of the data.
3. **Trended measurement data** in an easy-to-understand graphical display.



Population Explorer Visualization II

1. **Customizable drill down data visualization.** The sample shown is for discharge count by primary ICD9 diagnosis code. The application enables the ability to drill down to the specific patient level.
2. **Ability to change filters and quickly view information** based on different variables such as age and admit source.



TCH has developed their Clinical Systems Integration (CSI) model for care process improvement which now allows EBOC to generate guidelines for care and support the science through evidence for care process improvement. Working with the registries, smaller teams can access data related to the EBOC guidelines to manage projects smaller in scope than those of the CSI care process teams. Additionally, EBOC continues to support the work of the larger CSI teams for process improvement.

Before implementing the Health Catalyst solution, EBOC teams needed six months to develop a new, evidence-based initiative for a targeted clinical program. Today, they are able to define cohorts, analyze and validate baseline data; and in collaboration with a care process team, draft concrete quality-improvement targets in a matter of a few weeks. The solution also helps them identify upfront the best individuals to participate on the quality-improvement team for a specific initiative.

Not only has the application streamlined the process of defining cohorts for improvement initiatives, it has also helped the EBOC identify where improvement is needed most within each population. By using Population Explorer to delve into a population and examine performance on measures such as length of stay and readmission rates, the team has quickly identified where to focus improvement efforts from the outset. 🏠

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](#).