

Standardizing Labor and Delivery Best Practices to Improve Outcomes



HEALTHCARE ORGANIZATION

Community Hospital System

TOP RESULTS

- Successful implementation of a clinical improvement model
- Significant clinician engagement and multidisciplinary collaboration
- Sustained zero early elective delivery rate
- Anticipated 20 percent-plus time savings of one equivalent FTE per month

PRODUCTS

- Late-Binding™ Data Warehouse Platform
- Population Health and Patient Injury Prevention Analytics Application-Labor and Delivery Module

SERVICES

- Installation Services
- Clinical Improvement Services



Advancing women's health, including addressing quality and safety issues related to labor and delivery, is a key part of the nation's healthcare quality improvement agenda. Mission Health, North Carolina's sixth-largest health system, recently embarked on a campaign to improve overall perinatal care including the appropriate use of, and supporting documentation for cesarean sections (C-sections). It has implemented an improvement program to assure that the use of C-sections adheres with emerging national best-practice standards, and supports reporting requirements. This campaign is an important component of the organization's overall clinical improvement initiative,¹ designed to promote standardization and eliminate unnecessary variation through the use of evidence-based protocols and data-driven process improvement.

SEEKING A SYSTEMATIC METHOD TO MEET QUALITY TARGETS

Like all healthcare providers in an industry moving toward value-based care, Mission needed to improve quality, reduce harm, manage complexity, eliminate waste, and operate more efficiently. Among the organization's priorities were improving the quality, safety, and cost of labor and delivery care, including the appropriate use of, and supporting documentation for C-sections.



We recognized an opportunity to standardize processes across our system so that patients receive the same high-quality care no matter where they are seen. If we achieve that goal, it will be because we identified the best practice based on the evidence and we implemented it in an effective, standard way into daily care. Having good data on hand and the ability to monitor use of the best practice will play an essential role in this effort.

Kellett Letson, MD
Medical Director
Women's Health
Mission Health

However, poor data quality and availability had previously restricted Mission from designing comprehensive performance improvement initiatives to address labor and delivery improvement opportunities. The process for acquiring data, validating it, and then creating reports was highly manual and inefficient.

To effectively implement and sustain labor and delivery improvement initiatives, the Mission team knew they needed to first create a more systematic method of collecting and analyzing data. They would also need tools for tracking compliance with standard evidence-based labor and delivery protocols.

BEST PRACTICE GUIDELINES, ANALYTICS INFRASTRUCTURE, AND CARE IMPROVEMENT

Mission Health had already begun developing and implementing an initiative for optimizing care delivery processes system-wide, across the full continuum of care.² Two key components of this initiative included:

- 1 **Clinical programs to organize evidence-based care across the continuum.** Clinical programs are a structure for organizing and delivering care by disease processes (like heart failure), by procedure type (like bowel surgery), or by preventive service (like healthy behaviors). The structure is designed to help clinicians deliver best-practice medicine based on proven protocols.

Evidenced-based clinical protocols called care process models (CPMs) serve as the building blocks of these clinical programs. They define a set of disease-specific or procedure-specific guidelines that assure that all care delivered throughout Mission Health—regardless of the patient's location—is evidence-based best practice, patient-centered, and delivered in the right care setting at the lowest cost to patients.

CPMs play an important role in helping caregivers deliver consistent care for all Mission Health patients and improve outcomes. Each CPM includes a decision tree for providers and resources for other staff on standards of care that cross the entire care continuum and care transition points. Each CPM also includes an overview of models of care and diagnosis criteria, as well as staging, goals, risk factors, therapies, interventions, metrics, and scientific publication references.

- 2 **An analytics infrastructure.** A late-binding enterprise data warehouse (EDW) platform by Health Catalyst serves as the analytics foundation to drive multiple performance improvement initiatives at Mission Health. The EDW aggregates clinical,



In the past we were in the dark about our metrics. With the analytics application, we have this information at our fingertips. This allows us to quickly identify the best opportunities for improving care.

Shannon Jaquess
Quality Improvement Advisor
Mission Health

financial, operational and other data to create a consistent view of information—a single source of truth to inform decisions. A wide range of analytics applications that target specific improvement initiatives run on top of this EDW platform. Mission had already used the EDW and analytics applications to help implement CPMs in other clinical programs, such as [sepsis care](#), and to achieve operational improvements, such as in [surgery](#).

Mission decided to apply a similar approach to improving its women’s population health. The team began by developing a C-section CPM that outlines specific tasks and metrics for the delivery process. These elements span the patient's journey from pre-admission through hospital discharge. The CPM also includes tracking of multidisciplinary care metrics such as:

- Pre-operative skin hygiene compliance
- Prophylactic antibiotics administration
- DVT prophylaxis administration
- Early initiation of post-operative function recovery (i.e. oral intake, mobilization, catheter removal)
- Patient education, involvement, and discharge planning

Mission then implemented an analytics application on the EDW platform to support perinatal performance improvement. This labor and delivery analytics application enables the team to identify opportunities for improvement in perinatal care across the system.

The application’s visualizations provide summary views and trends as well as drill-down capabilities to filter into greater detail on individual metrics. For example, the C-Section dashboard (see Figure 1)

FIGURE 1: SAMPLE C-SECTION DASHBOARD

- 1 Case volume, LOS, and mortality metrics
- 2 Rolling 12-month trended average patient volume metrics
- 3 C-section rate metrics, including rolling 12-month trends
- 4 Time, delivery cohort, DRG, and location filters

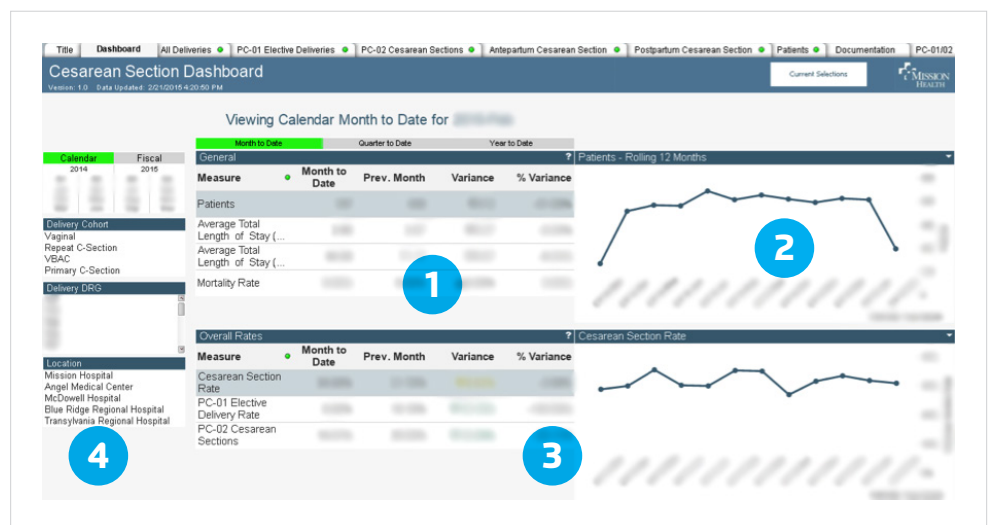


Figure 1: Sample C-section dashboard

delivers an at-a-glance view in near real-time of key perinatal care metrics for a given time period including number of deliveries, C-section rates, length of stay (LOS) and mortality—all of which can be filtered by delivery cohort, DRG, and location.

Similarly, the All Deliveries dashboard page (see Figure 2) provides an at-a-glance view of more specific delivery metrics for a given time period, including deliveries by shift and time of day to assist staff scheduling and C-section rates by patient risk factors such as gestational age at birth, and primary versus repeat C-section, C-section rates, LOS, readmission, and mortality. Time-series visualizations serve as a gauge as to whether metrics are moving in the right direction. The team is able to filter by delivery type, induction, patient demographics and risk factors, labor management provider group, and hospital location. With this information, the team can, among other things, monitor the perinatal care core length of stay for deliveries less than 39 weeks.

FIGURE 2: SAMPLE C-SECTION ALL DELIVERIES DASHBOARD

- 1 Total deliveries, C-section rate, LOS, readmission, and mortality rate
- 2 Rolling 12-month trended C-section and LOS metrics
- 3 Deliveries by day of the week and nursing shift
- 4 C-section rates by labor management provider and gestational age



Figure 2: Sample C-section all deliveries dashboard

A SUCCESSFUL CLINICAL IMPROVEMENT MODEL FOR LABOR AND DELIVERY

The following are the top results achieved to date through Mission’s perinatal care improvement initiative.

Successful implementation of a clinical improvement model

Mission Health has successfully implemented a clinical improvement model for labor and delivery—as it now has for several clinical programs throughout the enterprise. This model features strong

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We view the enterprise data warehouse as the ‘collector of truth.’ Before implementing the EDW, we knew our C-section rate, but that was the extent of our knowledge. We simply didn’t have much other data to support improvement through our care process models. We could not dig deeper into the data to learn all we needed to learn. With the EDW, we have the information we need to make real improvement.”

Kellett Letson, MD
Medical Director
Women’s Health
Mission Health

senior leadership, a sound, data-driven improvement methodology, engaged care providers, ready access to highly reliable information, and a high degree of standardization with the ability for clinicians to vary care when appropriate.

Deployment of analytics tools for labor and delivery provides detailed visibility into the operations of one of Mission’s most strategic service lines. Drill-down and data visualization capabilities have enabled leaders to identify important trends and potential opportunities for improvement as well as hold caregivers accountable for adhering to evidenced-based practice.

The application is currently rolled out among “super user” clinicians who monitor the data and share feedback with the broader group of caregivers at Mission. As the C-section CPM is implemented across the entire health system, the super users have begun to vet the new evidence-based protocols with other labor and delivery clinicians. They report an enthusiastic response to the protocols, suggesting the potential for smooth clinician engagement as the initiative rolls out more broadly.

Ability to manage and meet regulatory and contractual requirements

With this infrastructure in place, Mission is well positioned to track and improve compliance with emerging state and national best practice guidelines and quality metrics. The team is able to manage reporting requirements with minimal manual work and to rapidly initiate performance improvement strategies, when needed, in order to meet regulatory or contractual requirements—including a multi-million dollar contract currently in place. A key perinatal quality measure from The Joint Commission, Mission has sustained a zero early elective delivery rate through the 2015 calendar year to date.

Anticipated 20 percent-plus time savings of one equivalent FTE per month

Mission’s EDW infrastructure is alleviating the data timeliness, completeness, and quality concerns that had hampered previous initiatives to improve labor and delivery care. It is also significantly reducing the time spent manually collecting data and performing rate calculations. With the automation of data acquisition and robust visualizations, Mission anticipates a potential 20 percent-plus time savings of one equivalent FTE per month.

“Our ultimate goal is to use the analytics application to improve clinical care and operational performance system-wide. We are very excited about rolling out this wonderful tool more broadly among clinicians and staff. So far our clinicians have seen what we are doing to improve care and have given us very positive feedback.

Shannon Jaquess
Quality Improvement Advisor
Mission Health

WHAT'S NEXT

Mission has begun to roll out the C-section CPMs and the labor and delivery advanced analytics application more broadly across the organization. The team will continue its efforts to engage clinicians and implement multidisciplinary collaboration. An important part of this effort will involve using data to increase transparency and thus drive further engagement and cultural change. Involvement of labor management providers has already built a level of trust that can be leveraged in the future as Mission focuses on improving labor and delivery care, including achieving the optimal NTSV (nulliparous, term singleton, vertex) C-section rate as national best practices are delineated. As its evidence-based processes mature, Mission plans to enrich the data set and implement new improvement initiatives by automating the acquisition of additional perinatal data elements.

The focus on labor and delivery is just one piece of Mission Health's overall improvement strategy. Mission will continue to roll out its clinical program improvement initiative to other service lines, such as children's, orthopedics, neurosciences/spine, and surgery/trauma. The organization will continue to expand its analytics capability by adding analytics applications running on the EDW platform to support quality improvement, utilization, and cost-reduction initiatives. ♪

REFERENCES

- 1, 2. Clinical programs: Managing care across the continuum. (2015, January 7). Retrieved from: <http://www.mission-health.org/content/clinical-programs-managing-care-across-continuum>

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.

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