

# Multimodal Pain Management Approach Reduces Opioid Prescriptions After Bariatric Surgery



## HEALTHCARE ORGANIZATION

Integrated Delivery System

## PRODUCTS

- Health Catalyst® Data Operating System (DOS™) Platform

## SERVICES

- Installation Services

## EXECUTIVE SUMMARY

Chronic knee and back pain associated with morbid obesity increases the risk for opioid dependence among patients undergoing bariatric surgery. Up to 77 percent of patients who were chronic opioid users before bariatric surgery continued chronic opioid use in the year following surgery, and the amount of chronic opioid use increased. Despite the national opioid crisis, many clinicians rely solely on opioid medications to manage pain during the acute phase of postoperative care, rather than incorporating a multimodal pain management approach.

Mission Health sought a comprehensive, data-driven, evidence-based approach to reduce opioid prescribing after bariatric surgery, decreasing the risk for misuse and harm. The health system turned to its analytics platform for timely, actionable insights into bariatric surgical outcomes, using the data to develop a care process model (CPM) for patients undergoing bariatric surgery. This model includes an enhanced recovery after surgery (ERAS) protocol to address all phases of care before, during, and after surgery to improve patient outcomes.

Using comprehensive ERAS protocols with multimodal pain management interventions, Mission realized substantial reductions in opioid use for pain management among patients undergoing bariatric surgery, including a:

- 29.3 percent relative reduction in the number of opioids prescribed during the intraoperative phase of surgery.
- 35.4 percent relative reduction in the number of opioids prescribed during the post-anesthesia recovery phase of surgery.
- 16.9 percent relative reduction in the number of opioids prescribed during the inpatient phase of surgery.



“Once the dashboards were built and modeled, the speed at which we could make quality improvements was amazing. We can use data to our advantage—data steers the ship.”

Beth Durr, RN  
Clinical Program Manager

## BARIATRIC SURGERY AND OPIOID DEPENDENCE

Drug overdose deaths from opioids reached a record high in 2016. Also, an estimated 48.5 million people in the U.S., 18 percent of people older than age 12, reported using illicit drugs or misusing prescription drugs in the past year. With increased awareness of its misuse, opioid prescribing is decreasing.<sup>1</sup>

Patients with chronic knee and back pain due to morbid obesity are at increased risk for opioid dependence. As many as 77 percent of patients who were chronic opioid users before bariatric surgery continued chronic opioid use in the year following surgery, with the amount of opioid use increasing.<sup>2</sup>

Opioid prescription side effects include nausea, vomiting, constipation, and drowsiness—each impeding recovery. Multimodal perioperative care pathways, known as enhanced recovery after surgery (ERAS) protocols, include key elements of preoperative counseling, optimizing nutrition, standardizing analgesic, anesthetic regimens, and early mobilization designed to achieve faster recovery after surgical procedures.<sup>3</sup> A component of ERAS, multimodal pain management, has demonstrated effectiveness in reducing opioid use after surgery.<sup>4</sup>

One of the nation's leading providers of healthcare services, HCA Healthcare is made up of locally managed facilities that include 185 hospitals and 119 freestanding surgery centers located in 21 U.S. states and in the United Kingdom. Mission Health, an operating division of HCA, based in Asheville, North Carolina, is the state's sixth-largest health system, serving much of western North Carolina with more than 12,000 employees and 2,000 volunteers. Its bariatric surgery program offered through the Mission Weight Management Center, a Cigna 3-Star Quality Bariatric Center, has been designated as a Bariatric Surgery Center of Excellence® by the American Society for Metabolic and Bariatric Surgery and the Surgical Review Corporation®.

Blue Cross Blue Shield has also recognized Mission Weight Management Center with its “Blue Distinction for Bariatric Surgery®,” which is given to centers with a proven track record for patient safety, consistent delivery of quality care, and favorable outcomes in bariatric surgery performed for morbid obesity. To further optimize care, Mission focused on reducing the risk of opioid misuse among its bariatric surgery patients.

“Having access to data told us where to focus our efforts. By providing global education followed by specific feedback—in near real-time—we are able to share with staff how their changes are impacting patient outcomes.

Beth Durr, RN  
Clinical Program Manager”

## LACK OF ACTIONABLE DATA PREVENT NEW APPROACHES TO MANAGING PAIN

Clinicians at Mission understood the significance of opioid use after surgery and the potential for misuse of them in the future. Mission needed access to actionable data that could be used for improving and reducing opioid use after surgery. Information on opioid prescribing after bariatric surgery was obtained through labor-intensive manual processes, resulting in substantial data lag time, negatively impacting improvement efforts.

While aware of the risk for misuse, clinicians routinely relied on opioid medications to manage pain during the acute phase of postoperative care and use of a multimodal pain management approach was limited. Without standard processes, the methods for managing acute pain varied. Mission desired a comprehensive, data-driven, evidence-based approach to reduce opioid prescribing after bariatric surgery, decreasing the risk for misuse and harm.

## MULTIMODAL PAIN MANAGEMENT TO REDUCE OPIOID MISUSE

Mission relies on CPMs as the standard to ensure care delivered throughout the organization, 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. As a data-driven organization, it leverages the Health Catalyst® Data Operating System (DOS™) platform and a robust suite of analytics applications, including the Bariatric Surgery Analytics Accelerator, to gain insight into bariatric surgical outcomes including preoperative care, opioid prescribing, postoperative nausea management, and length of stay (LOS) (see Figure 1).

## FIGURE 1: BARIATRIC SURGERY ANALYTICS ACCELERATOR SAMPLE VISUALIZATION

- 1 Filter by date, visit detail, medication type, and location administered.
- 2 Displays number of opioid prescribed and type of opioid prescribed over phases of care.
- 3 Graphs opioid doses and type over time.

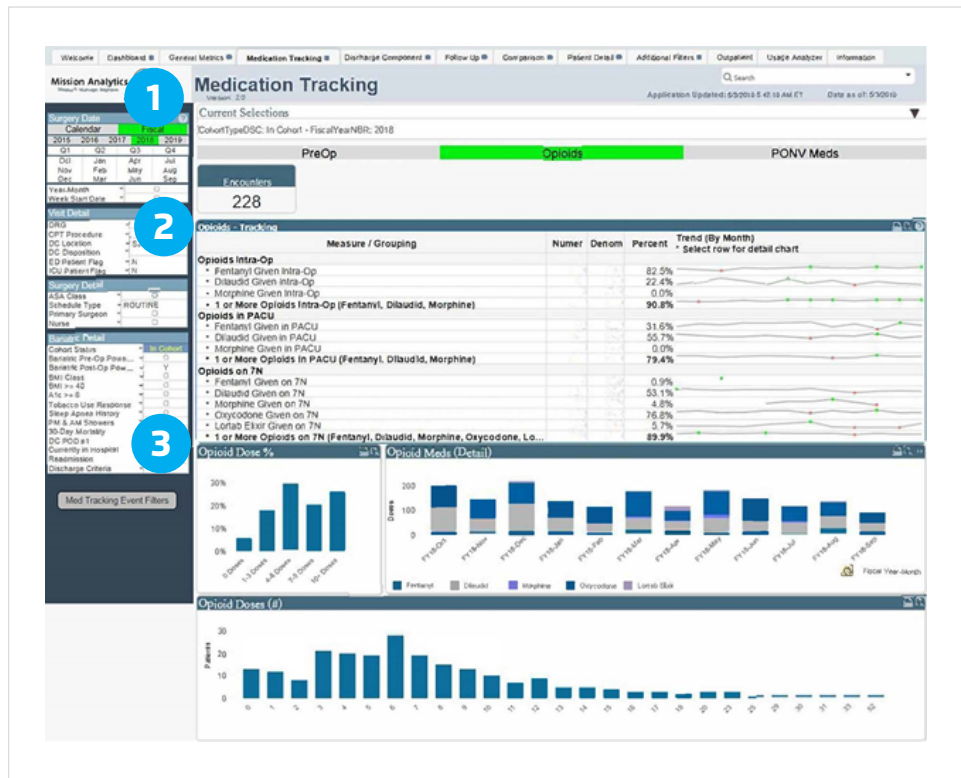


Figure 1: Bariatric Surgery Analytics Accelerator sample visualization

The analytics application provides near real-time insight into bariatric surgical outcomes across all phases of care, supporting the reporting of quality measures to regulatory agencies, performance monitoring, and identification of improvement opportunities. Specifically, for the opioid reduction initiative, opioid prescribing data is available in the medication tracking tab.

At monthly multidisciplinary CPM meetings, champions from anesthesia, surgery, nursing, and quality improvement drill into the data to understand opioid prescribing, allowing the team to target interventions aimed at reducing opioid use after bariatric surgery. The team can visualize and understand opioid use intraoperative, immediate postoperative, and during the inpatient stay. Also, the team can use the analytics application to visualize the monthly trend for the number of opioids prescribed, the number of doses administered, and the opioid medications that are used the most frequently.

“With delayed access to data, we lacked the ability to evaluate the current status and then make changes. Now, we can make specific, targeted interventions and evaluate the impact of those actions on clinical outcomes.”

Scotta Orr, BSN, MPH,  
RN, CPHQ  
Quality Improvement Advisor,  
Quality, Safety and Engineering

## Developing a CPM inclusive of pain management strategies

Armed with visibility into performance, the Mission improvement team developed a CPM for the patient undergoing bariatric surgery. The CPM includes an ERAS protocol to address all phases of care before, during, and after surgery to improve patient outcomes.

The multimodal pain interventions within the ERAS protocol offer alternatives to opioids beginning in the pre-surgery phase and continuing through the postoperative phase. This includes:

- **Upon arrival in the pre-surgery area:** Patients receive non-opioid medications to pre-emptively avoid nausea and to reduce pain.
- **During the surgical procedure:** The anesthesia provider administers long-acting, non-opioid medications to avoid increased pain during the recovery phase.
- **On the postoperative inpatient units:** The nursing staff focuses early pain management efforts utilizing multimodal interventions, including distraction, non-steroidal medications, anti-emetics, and other therapies as an alternative to opioids.

Education for patients, providers, and nursing was identified as a key component to successfully changing opioid use after bariatric surgery. Mission provided multimodal pain management education to:

- **Patients:** A preoperative class helps patients establish an expectation of pain after surgery and best practice for managing pain. Information is provided on the pain scale, the side effects of opioids, including nausea, constipation, and drowsiness, the impact of opioids on recovery after surgery, and the importance of alternatives to opioids.
- **Providers:** Information about evidence-based alternatives to opioids is sent to providers, including the options that are included on the standard order sets.
- **Nursing:** Registered nurses receive education about multimodal pain management strategies included in the plan of care, and the importance of selecting non-opioid alternatives as the first intervention for pain when appropriate.

Clinical outcomes have improved, patients are getting home sooner, nausea and pain have decreased, all while reducing costs. We shortened length of stay without negatively impacting patient satisfaction.

Scotta Orr, BSN, MPH,  
RN, CPHQ  
Quality Improvement Advisor,  
Quality, Safety and Engineering

Nurse champions were influential in supporting the patients, using reminders of the preoperative education class, and coaching patients to help them make an informed choice about how to best manage their pain.

Within 48-hours of hospital discharge, the ambulatory clinic conducts follow-up phone calls, contacting the patient to understand if their goals were met. The clinic asks about comfort, nausea, constipation, safety, and satisfaction with care. Overwhelmingly, patients are thankful for the early education and satisfied with the comfort achieved by using multimodal pain management strategies.

### Extending the use of analytics for further improvements

In addition to improving the ability to monitor and reduce opioid use, the improvement team uses the analytics application to identify other opportunities enhancing the patient experience and organizational outcomes. For example, the team determined that some patients experienced an increase in LOS due to postoperative nausea. This information was shared with anesthesia and nursing staff, who were then able to increase their focus on providing early interventions to reduce nausea, including reducing reliance on opioid medications.

## RESULTS

Using the comprehensive ERAS protocol with multimodal pain management interventions, Mission was able to substantially reduce opioid use for pain management among patients undergoing bariatric surgery, including a:

- 29.3 percent relative reduction in the number of opioids prescribed during the intraoperative phase of surgery.
- 35.4 percent relative reduction in the number of opioids prescribed during the post-anesthesia recovery phase of surgery.
- 16.9 percent relative reduction in the number of opioids prescribed during the inpatient phase of surgery.

In addition to lowering opioid use, the comprehensive ERAS protocol has led to a 10.7 percent relative reduction in the LOS observed over expected rate, resulting in 26 fewer inpatient days.

## WHAT'S NEXT

Given its success with improving outcomes for patients undergoing bariatric surgery, Mission intends to focus future improvement efforts on bariatric care for the non-surgical populations. The organization is working on increasing its use of comprehensive, data-driven, evidence-based strategies for weight loss, and is focused on decreasing co-morbidities in the bariatric population. 📌

## REFERENCES

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## ABOUT HEALTH CATALYST

Health Catalyst is a leading provider of data and analytics technology and services to healthcare organizations, committed to being the catalyst for massive, measurable, data-informed healthcare improvement. Our customers leverage our cloud-based data platform—powered by data from more than 100 million patient records, and encompassing trillions of facts—as well as our analytics software and professional services expertise to make data-informed decisions and realize measurable clinical, financial, and operational improvements. We envision a future in which all healthcare decisions are data informed. Learn more at [www.healthcatalyst.com](http://www.healthcatalyst.com).

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