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Abstract

Background: One in 300 opioid naïve women become addicted to opiates after cesarean birth. After cesarean, women are often prescribed more opiates at discharge than necessary, resulting in increased opportunity for diversion.

Purpose: To improve use of comfort strategies and nonopioid medications to decrease the amount of opioids required postoperatively and prescribed at discharge, in women who gave birth via cesarean.

Methods: An interdisciplinary workgroup was convened to assess data on opioid use, prescribing practices at discharge, and nurses' use of alternative comfort strategies from January to March 2018. A comfort bundle was designed to include standardized use of preoperative acetaminophen, postoperative comfort education, simethicone, postoperative gum chewing, and abdominal binders. Nurses and healthcare providers were educated on the initiative. Data were reevaluated and compared with preintervention data assessing for improvement and adherence to the bundle components.

Results: There was a 61% reduction in morphine milliequivalents given to women after cesarean birth between the first quarter in 2018 and the fourth quarter in 2018. Comparing March with December, 2018 data, adherence to each bundle component improved. The percentage of women receiving less than 20 tabs of oxycodone at discharge increased from 26.3% to 96.7%.

Implications for Nursing Practice: Nurses should evaluate comfort options provided after cesarean birth and educate women about use of nonopioid pain relief strategies. A standardized process to address pain and comfort after cesarean birth may decrease exposure to opioids while maintaining comfort.

Key words: Analgesics; Cesarean birth; Comfort; Opioid; Patient; Quality improvement.

A Quality Improvement Initiative to

REDUCE OPIOID CONSUMPTION AFTER CESAREAN BIRTH

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In 2016, over two million people misused prescription opioids and over 17,000 deaths occurred due to an overdose on prescribed opioids (US Department Health and Human Services, 2019). In 2017, the Department of Health and Human Services declared the opioid epidemic a public health emergency. According to the Centers for Disease Control and Prevention (CDC, 2018), long-term use of opioids often begins after treatment of acute pain. Surgery may unmask a patient's susceptibility to long-term opioid use (Sun, Darnall, Baker, & Mackey, 2016). Although opioids are often used to treat acute pain, other options should be considered due to significant side effects and risk for addiction associated with opioid consumption (American College of Obstetricians and Gynecologists [ACOG], 2018).

Opioid Use after Cesarean Birth

Cesarean birth is the most common major surgery in the United States (Martin, Hamilton, Osterman, Driscoll, & Drake, 2018). There were over 1.25 million cesareans in 2017 at a rate of 32% of all births (Martin et al.). Pain after cesarean birth has two components, visceral and somatic. Somatic pain occurs due to the trauma associated with surgical incision and visceral pain is related to the accompanying inflammation (Lavoie & Toledo, 2013). Thus, it is best to take a multimodal approach to manage postoperative pain. Prescription pain medications are often a primary method of pain relief used postoperatively (ACOG, 2018). Approximately 1 in 300 opioid naïve women become addicted after cesarean birth (Bateman et al., 2016). Osmundson et al. (2017) found that when opioids are prescribed postpartum, women are at increased risk of persistent use after the postpartum period. They "estimated that postpartum opioid prescribing resulted in 21,576 new persistent opioid users annually" (p. 1). All nurses and healthcare providers who care for childbearing women should consider methods to improve postoperative comfort yet reduce the overall amount of opioids used to limit exposure to opioid medications.

Since 2012, there has been an overall decline in the rates of opioid prescribing, yet the amount of opioids prescribed is three times higher than in 1999 (Guy et al., 2017). Although healthcare providers have become more cautious in their prescribing (CDC, 2018), Bateman et al. (2017) reported that after cesarean birth, women are often prescribed significantly more opioid at discharge than necessary, leading to leftover opioid which increases risk of diversion. Bateman et al. found that when lower amounts of opioid were prescribed, less opioid was consumed.

A comprehensive and interdisciplinary approach to improving postoperative comfort that spans a patient's inpatient and outpatient postoperative care is important. An overall reduction in reliance on opioid medications as the primary method of postoperative pain relief while inpatient and improved adoption of nonopioid and nonpharmacologic measures has potential to influence patients' need for opioids at discharge.

Although opioids are often used to treat acute pain, other options should be considered due to significant side effects and risk for addiction associated with opioid consumption.

Call to Action

With an understanding of the seriousness and societal implications of opioid addiction at both the national and community level, our institution issued a call to action requiring each service line to take innovative approaches to how we address postoperative comfort and pain relief. Surgeons from a variety of specialties including obstetrics were challenged to decrease the number of morphine milliequivalents (MME) prescribed at discharge by 10%. To support the providers' initiative to prescribe less opioids at discharge, maternity nurses determined it necessary to assess methods we use to provide pain relief and promote comfort after cesarean birth during postpartum hospitalization.

An interdisciplinary workgroup was convened to explore methods to improve comfort and decrease opioid use in women after cesarean. The core group included the maternity unit nurse educator and nurses from the women and children service line administrative team. The workgroup also included maternity staff nurses, an obstetrician/gynecologist (OB/GYN) resident physician in training, and a maternal–fetal medicine physician fellow. Anesthesia and pharmacy representatives were consulted throughout the process. The aim of the initiative was to implement and evaluate use of a multimodal comfort bundle for women after cesarean birth to decrease use of opioid medications as first-line therapy for postoperative pain relief for women. The project was reviewed by the Institutional Review Board at the study site and deemed to be a quality improvement project rather than research.

Methods

Components of the Comfort Bundle

After cesarean birth, untreated postoperative pain can cause poor maternal bonding, increased risk of postpartum depression, difficulty breastfeeding, inability to care for oneself and their newborn, and decreased patient satisfaction (Eisenach et al., 2008; Sutton & Carvalho, 2017). However, use of opioid pain medication has implications, due to associated side effects such as nausea, vomiting, constipation, urinary retention, itching and sedation, which can affect a new mother's ability to safely care for her newborn (Ozmete et al., 2016; Sutton & Carvalho). Because pain is a subjective experience that includes physical and emotional factors, it is important to take a multimodal approach when creating a comprehensive pain relief strategy for women after cesarean.

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After cesarean birth, women are often prescribed significantly more opioid medication at discharge than necessary, leading to leftover opioid which increases risk for diversion.

The workgroup began by conducting a literature review to determine best practices in postoperative pain relief to include in a standardized comfort bundle. The workgroup consulted with institutional stakeholders to determine best practices used by other service lines to promote postoperative comfort after other surgical procedures. After identifying best practices, as a group we discussed feasible methods to improve comfort care provided to our patients. We explored unit-based processes in provision of postsurgical comfort care to determine gaps and areas in need of improvement. As a result of this process, the following components were included in the comfort bundle.

Preoperative Acetaminophen. Preoperative acetaminophen reduces pain (Ozmete et al., 2016) and opioid consumption postoperatively (Moon, Lee, Lee, & Moon, 2011; Ozmete et al.). Acetaminophen has been shown to be safe when used in therapeutic doses during pregnancy and in lactation (Servey & Chang, 2014). Preoperative intravenous acetaminophen has been implemented prior to other surgical procedures in our hospital, however not for cesarean birth. Due to excessive cost of intravenous acetaminophen and number of cesarean births, cost was a barrier to its use preoperatively in our population. Experts from the anesthesia and pharmacy departments indicated oral acetaminophen was a safe and effective option for this patient population (Jibril, Sharaby, Mohamed, & Wilby, 2015). After agreement from anesthesia and obstetric providers, we worked with the informatics team to ensure that the order for oral acetaminophen was included in the preoperative order set and we provided labor and birth nurses education about the new order.

Abdominal Binder. An abdominal binder is a device made of elastic material that encircles the abdomen to provide support to the abdominal wall, particularly at the site of the incision. Although available and used on our maternity unit, the workgroup believed that its overall adoption into the standard postoperative nursing plan of care was low. The literature yielded conflicting evidence on use of abdominal binders to improve pain relief postoperatively (Gillier, Sparks, Kriner, & Anasti, 2016; Gustafson, Dong, Duong, Kuhlmann, 2018; Larson, Ratzer, Davis-Merritt, & Clark, 2009). We concluded splinting of abdominal incisions may have additional postoperative benefits such as allowing ease of repositioning and ambulation, which in turn may affect their overall comfort. To improve uptake of this component of the bundle, the abdominal binder was added to the preoperative order set removing the need for the nurse to obtain an order and we encouraged the postpartum nurse to apply the binder if not already done so upon the patients' arrival to the unit.

Acetaminophen and Ibuprofen. Current unit-based postoperative prescribing protocols for cesarean births include regularly scheduled (every 6 hours) administration of acetaminophen and ibuprofen. Scheduling doses of acetaminophen and ibuprofen together decreases patient interruptions and nursing workload. Ibuprofen and acetaminophen provided in combination has been shown to provide more effective analgesia than either drug alone and can decrease use of opioids (Derry, Derry, & Moore, 2013; Valentine, Carvalho, Lazo, & Riley, 2015). Although regularly prescribed, there was concern about patient adherence to these protocols, possibly skipping regularly scheduled doses if not in pain or awake at the time of the scheduled dose, which in turn could lead to increased pain later and need for pain relief strategies to be augmented with higher doses of opioid medications. Nonsteroidal anti-inflammatory medications, such as ibuprofen are particularly effective in reducing the visceral component of pain after cesarean birth, through their ability to suppress inflammation as well as inhibit chemical mediators involved in the nociceptive pain response (McDonnell, Keating, Muchatuta, Pavy, & Paech, 2009). Inclusion of a nonsteroidal anti-inflammatory medication is integral to improved pain control postoperatively (Lavoie & Toledo, 2013).

Simethicone. Gas pain and bloating are common after abdominal surgery and can be severe. Gibstein, Cooper, Wisot, and Rosenthal (1971) reported addition of simethicone to the postoperative regimen for obstetric and gynecologic patients may decrease abdominal discomfort. Simethicone is an antiflatulent that can be given postoperatively as a chewable tablet. There are few contraindications to its use; hypersensitivity to the main ingredient, and known or suspected intestinal perforation or obstruction (Simethicone, 2018). Therefore, simethicone is easy to use in most postoperative patients. Although per the standard order set, simethicone was prescribed postoperatively after cesarean births at our institution, and written every 4 hours as needed, the workgroup hypothesized the drug was not being used frequently by the maternity nurses.

Figure 1. Patient Education Brochure for Postoperative Cesarean Birth Comfort Measures

Managing your pain

Congratulations on the birth of your new baby! A cesarean section is a major surgery and our healthcare team is here to support you as you recover. We expect you to have some discomfort at the incision site. It is important to take time to allow your body to rest and heal. You will remain in the hospital for about 3 days postpartum. During that time, our team's goal is to keep you comfortable.

These measures include:

- An abdominal binder (an elastic belt) to support your incision.
- Chewing gum to decrease bloating.
- Creating a relaxing environment that allows you to rest. Consider using soothing music, dim lighting, and limiting visitors to promote rest.
- Walking! Your nurse will assist you when getting up to walk for the first time and encourage you to walk frequently throughout your stay.
- Using the bathroom regularly. A full bladder can increase discomfort.
- Most patients will be given Tylenol and Ibuprofen every 6 hours. Taking these medications **regularly** promotes comfort.
- You will be given Simethicone to decrease gas pain, and a stool softener each evening to make it more comfortable when you go to the bathroom.
- Changing your position frequently may help to improve your comfort.
- Avoid tight clothing that could rub on your incision.

By consistently using simple comfort strategies, you can effectively decrease anxiety, stress and promote healing and comfort. Talk with your nurse! You can work together to improve your comfort.

Sincerely,

Your Maternity Nursing Staff

Because patients may not recognize or appropriately verbalize the cause of their pain, the group considered that opioids may be used in some cases to treat pain which may be associated with postoperative gas and bloating. To increase use of simethicone, a singular component of the comfort bundle, our workgroup recommended that simethicone be provided to women postcesarean at the same time as their regularly scheduled acetaminophen and ibuprofen. With an understanding that postoperative gas pain could be mistaken for incisional pain, we educated nurses on the importance of standardized implementation.

Gum Chewing. After abdominal surgery, it is common for bowel function to slow or stop for a few days postoperatively, which can increase abdominal discomfort and pain (Short et al., 2015). Gum chewing after cesarean birth may allow for earlier recovery of bowel motility, through cephalo-vagal stimulation (Ciardulli, Saccone, Di Mascio, Caissutti, & Berghella, 2018; Short et al.; Zhu, Wang, Zhang, Dai, & Ye, 2014). Ciardulli et al. stated that women who began chewing gum immediately postoperatively three times a day for 30 minutes until first flatus reported lower mean time to first flatus and first feces, less nausea, and improved satisfaction than those who did not chew gum. Prior to implementing the comfort bundle, gum chewing was not a comfort strategy we routinely used on our unit to improve bowel motility for women after cesarean birth. Packets of gum in various flavors were purchased and kept on the unit. Nurses were educated on the role of gum chewing in enhancing comfort after cesarean birth. Nurses instruct the woman on how gum chewing is effective as a comfort measure, offer her a choice of sugared or sugar-free gum, and give her the gum once it is determined per the sedation scale integrated into the electronic health record (EHR) that she is alert and oriented enough to chew the gum safely.

Initially we struggled to track adherence as there was not a place to easily document its use within the EHR, so nurses needed to document its use in their nursing notes. To improve ease of documentation of gum chewing as well as other nonpharmacologic comfort measures for nursing, we worked with nurse informaticists to build a comfort tab into the EHR. The comfort tab allows for discrete documentation of a variety of nonpharmacologic comfort measures, and thus allows for easier audit of the nonpharmacologic comfort interventions in our bundle. Nurses were educated about where to access the comfort tab and how to properly document using the comfort tab.

Patient Education. An integral component to our comfort bundle was a patient education brochure that included details on each component of the comfort bundle as well as the importance of incorporation of other nonpharmacologic measures such as ambulation and position changes into a comprehensive plan of care. The brochure is provided to all women after cesarean on arrival to their postpartum room. The education is reviewed with the woman by the admitting nurse (Figure 1).

Nurse Education and Engagement. Preintervention data on unit-specific opioid and comfort strategy use were reviewed with nurses to establish the need for the comfort bundle. The comfort bundle was incrementally integrated into nursing workflow. By introducing the changes in smaller increments, maternity nurses were motivated to continue, as they celebrated successful implementation of each component. Education on the importance of routine administration of acetaminophen and ibuprofen was initiated first, followed by use of simethicone and then gum. Education on all components of the bundle were provided via staff meetings, daily huddles, weekly emails, and individually as deemed necessary from EHR audits. Signs promoting use of simethicone were placed on all Pyxis machines, and posters promoting gum chewing were hung on the unit. Baseline data suggested an overreliance on higher doses of oxycodone than may be necessary to effectively manage postoperative pain in this population. The unit educator provided education to nurses on the patterns noted, specifically the persistent provision of oxycodone 10 mg and shared importance of communicating with patients on how to effectively manage pain and incorporate other nonopiate comfort measures. Nurses were cautioned not to withhold opiate medication, but to be thoughtful in how it was used and to carefully choose the language they use when discussing pain.

Provider Education. During our workgroup meeting, we reviewed the process used by providers for writing discharge prescriptions for oxycodone. The OB/GYN resident physician representative on our workgroup noted that resident physicians write the overwhelming majority of discharge prescriptions for oxycodone after cesarean birth, regardless of whether the patient sees a private provider or the resident practice. On reviewing the process, we determined that most often, discharge prescriptions were being written immediately after surgery. Providers therefore were not evaluating the amount of oxycodone the patient consumed during their inpatient stay, prior to writing a discharge prescription. With this process, patients who consumed no opioids while inpatient would often be discharged home with a prescription for 20 or more tabs of oxycodone. In many cases, dose of oxycodone was not tapered as patients neared discharge.

We worked to standardize the process for when discharge prescriptions are written, and asked the residency director to encourage resident physicians not to write discharge prescriptions for opiates immediately after the cesarean. Resident physicians and providers were asked to wait until close to discharge to write prescriptions for opiates so a thoughtful conversation can occur between the woman and provider about their need for opioids once at home and the amount of opioids she consumed during their hospital stay can be reviewed. Previously there was a default set in the electronic health record for 30 oxycodone tabs prescribed at discharge after cesarean. A preset number was removed and providers are now required to write in the number of oxycodone tabs they wish to prescribe. Education for providers about our preintervention findings, and a discussion on the new process was held at OB department and resident business meetings. Support from the obstetrics and gynecology department chairman and residency director was integral to successful implementation of this program.

Setting

The site of this quality improvement project was a large suburban tertiary referral center in South Central Pennsylvania. In 2018 there were 3,126 births, 992 via cesarean. The maternity unit has 43 beds and approximately 100 nurses.

Evaluation Process

To establish a baseline, we assessed the amount of oxycodone used by all women admitted to the maternity unit. A unit-based report was obtained from the Pyxis system on all patients who consumed opioids after cesarean birth (total milligrams of oxycodone consumed), to include oxycodone 10 mg, oxycodone 5 mg, and oxycodone 5 mg/APAP 325 mg, between January and March 2018. Our baseline group included 209 women who had cesarean births. A medical record review was conducted for data on simethicone use, regularly scheduled administration of acetaminophen and ibuprofen, abdominal binder use, and whether the woman received a prescription for oxycodone at discharge, and number of oxycodone tabs prescribed at discharge.

Table 1. Inpatient Maternity Unit Oxycodone Use 2018

	Quarter 1 Jan–March	Quarter 2 April–June	Quarter 3 July–Sept	Quarter 4 Oct–Dec
	Baseline	Education	Roll Out	Roll Out
Doses oxycodone 10 mg given	1,290		258	389
Doses oxycodone 5 mg given	1,008		1,257	1,198
Doses oxycodone 5 mg/APAP 325 mg given	231		121	64
Total MME provided inpatient	44,235		14,205	16,897

Note. MME = morphine milliequivalents.

Table 2. Comfort Bundle Component Adoption Calendar Year 2018

	Quarter 1			Quarter 2			Quarter 3			Quarter 4		
	Baseline			Education			Roll Out			Roll Out		
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Number of charts audited	*n* = 38	*n* = 76	*n* = 95					*n* = 36		*n* = 33	*n* = 31	*n* = 30
Preoperative acetaminophen	0	0	0	Education and Initial Roll Out				33%	Moni-toring	53.30%	65.40%	85.60%
Postoperative abdominal binder use	57.90%	40.80%	55.80%					58.30%		96.70%	100%	96.70%
Simethicone	47.40%	46.10%	44.20%					100%		100%	100%	100%
Scheduled acetaminophen/ ibuprofen	50%	52.60%	48.40%					ND		100%	90.30%	96.70%
Gum chewing	0	0	0					25%		86.70%	71%	90%

Note. ND = no data.

Mean and frequency data were reported and compared across quarters of 2018. Oxycodone dose data were reported as MME, a method to report total opioids, accounting for differences in opioid drug type and strength (CDC, 2018). We also reported opioid use by type of opioid to assess trends in provision of different types and strength of oxycodone by nurses. Pharmacists continue to provide a monthly report to track unit oxycodone use. To assess adherence to each component of the comfort bundle and provider prescribing patterns, each month, approximately 30 randomly selected cesarean birth cases are identified from the electronic birth log, and a medical record review is completed by the maternity nurse educator to continue to track comfort bundle adherence. Data from the medical record review are analyzed monthly for compliance on each component of the bundle. Amount of each type and dose of opioid used on the maternity unit is calculated from Pyxis data provided by the pharmacists. Converting opioid use to a standard value, MME, allows for comparison of use of different types and doses of opioids. The data abstraction team from the quality improvement department reported data on average MMEs provided at discharge after cesarean birth.

To ensure we carefully considered implications of tighter control of opioid consumption on our patients' overall comfort and patient experience, we closely monitored patient experience scores. Due to delay in the reporting of patient experience scores, we also surveyed women who gave birth via cesarean after discharge about their overall comfort and pain relief during their stay as part of postpartum follow-up phone calls.

Bundle compliance, patient experience data, and both inpatient and provider discharge prescribing MME data are reported via a performance improvement dashboard, which is color-coded and clearly delineates that bundle components meet our established targets. The dashboard is on the Women and Children Service Line portal on the internal health system intranet to allow providers and administrators the ability to track progress of the overall project. Data are reported to maternity nurses at daily huddles and reinforced by email.

Results

Inpatient Oxycodone. At baseline, the MME given inpatient in quarter one (January to March 2018) was over 44,235 MME (Table 1). After education, there was over a 61% reduction in the MME provided on the maternity unit with 16,897 MME given in quarter four (October to December 2018). When tracking number of doses of oxycodone by dosage (oxycodone 5 mg, 10 mg or 5 mg/APAP 325 mg tablet), there was a dramatic reduction in the use of oxycodone 10 mg. At baseline (January to March 2018), 1,290 doses of oxycodone 10 mg were given, and in quarter four (October to December) 389 doses were given. Number of doses of oxycodone 5 mg provided remained relatively stable (Table 1). There was an approximately 50% reduction in use of oxycodone 5 mg/APAP 325 mg tablets given from the first quarter to the last quarter 2018.

Comfort Bundle Adherence. There was major improvement in compliance to all components of the comfort bundle (Table 2). We set a target of 90% adherence for each component of the bundle. Adoption of all components of the bundle with the exception of preoperative acetaminophen are at 90% or greater compliance for the month of December 2018. In December, on completing our review of compliance with the provision of preoperative acetaminophen we were initially disappointed, as education had recently been given on its importance and only 62% of patients in the review had received preoperative acetaminophen. However, on further review,

we determined that many patients who did not receive preoperative acetaminophen had an emergent cesarean. When excluding women who had emergent cesarean, use was at 82.6%.

Prior to implementation of the bundle, acetaminophen and ibuprofen were prescribed regularly postoperatively and were ordered to be given every 6 hours (at 6 and 12). However, our initial chart audit revealed that as many as 52% of women missed at least one of their regularly scheduled postoperative doses of acetaminophen/ibuprofen. Common reasons for the missed doses included, being the neonatal intensive care unit, patient sleeping, or patient denied pain. There were even cases where nurses had called providers and asked for the order to be changed to as needed (PRN) so they would not have to wake patients to provide the medication.

Baseline data revealed that simethicone was not highly used. Prior to the roll out of the comfort bundle only 63 doses of simethicone were given on the unit; however in the fourth quarter, 100% of eligible patients received simethicone. At baseline, our use of abdominal binders was poor, but now is offered to 100% of our cesarean birth population.

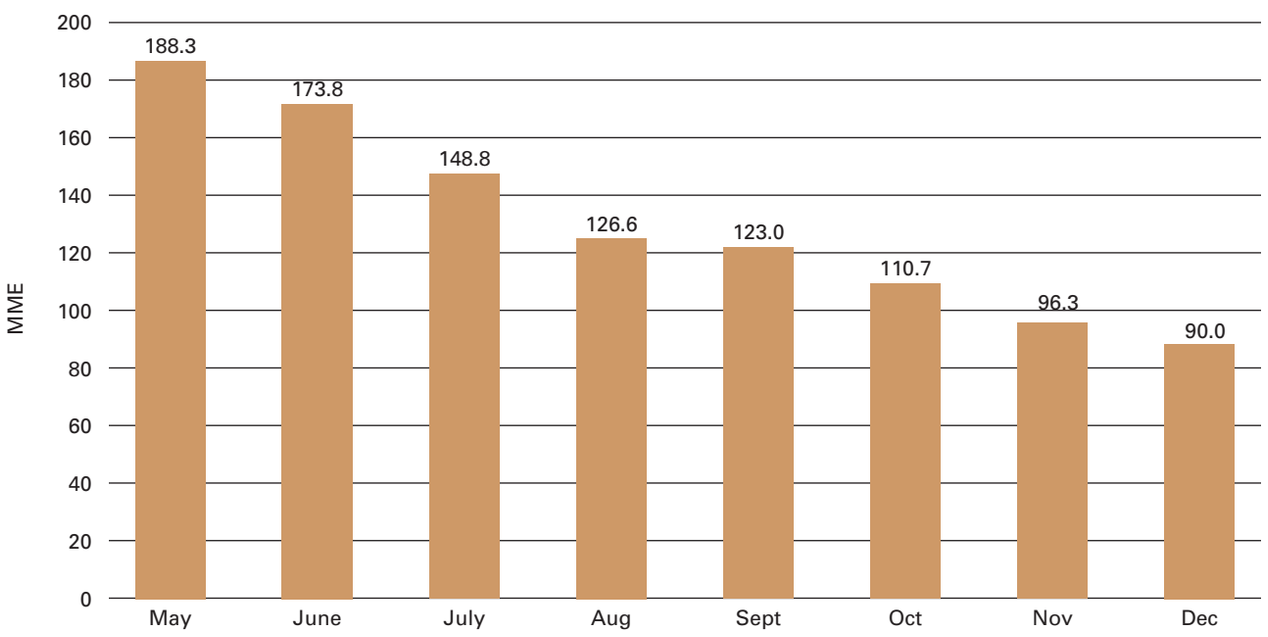
Oxycodone at Discharge. On average, in the first quarter of 2018, 53.8% of women who gave birth via cesarean were prescribed ≥20 tabs of oxycodone 5 mg at discharge and only 5.7% (n = 12) received none at discharge. In the first quarter 2018, 48 women (22.9%) took no oxycodone during their postoperative inpatient stay; however, 75% (n = 36) went home with a prescription for opioids, 22 of which had a prescription for >20 tabs. In the fourth quarter 2018, 2.1% (n = 2) of our randomly audited sample received >20 tabs at discharge. Specifically, in December of 2018 only one patient received >20 tabs at discharge, and 43% (n = 13) of the sample received no opioids. The average MME prescribed at discharge in May 2018 was 188, and in December of 2018, it was 90 (Figure 2).

Patient Experience. Patient satisfaction scores were monitored related to communication about pain and how well pain was controlled. Scores on both measures have improved. Prior to fully implementing the comfort bundle, from July 2018 to September 2018, communicating about pain was at 74.4. It continued to increase steadily and was at 82.5 for October 2018 to December 2018 and at 96.2 in January 2019. The measure, how well your pain was controlled was at 68 from July 2018 to September 2018, 73.8 from October 2018 to December 2018, and at 86.7 in January 2019. Overall, patients reported effective pain control, only 2 of the 38 patients surveyed reported ineffective pain control; however, they both reported extenuating circumstances (sickness and ineffective patient controlled analgesia [PCA] in the first 4 hours postop).

Discussion

There was a 61% reduction in MME given to women postoperatively while recovering inpatient after cesarean birth. Nurses, provider, and patient education along with the implementation of a standardized comfort bundle,

Figure 2. Morphine Milliequivalent Prescribed at Discharge



Although common multimodal postoperative pain relief strategies may already be ordered, such as simethicone, acetaminophen, and ibuprofen, medical record audits may reveal limited or nonstandard use of these strategies.

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can result in significant changes in the pattern of opioid use. Use of oxycodone 5 mg has remained fairly consistent throughout our project and even increased slightly; therefore, nurses should continue to provide patients opioid pain relief during periods of acute pain. However, the increased and standardized adoption of the comfort bundle and education on appropriate dosing, after careful assessment and use of other strategies, may have resulted in lower consumption of higher doses of opioids. The workgroup has added 2.5 mg of oxycodone to the postoperative order set as an alternative but it has not been fully implemented due to challenges with ordering within the EHR.

The Association of Women's Health, Obstetric and Neonatal Nurses (2019) and ACOG (2018) encourage creating individualized plans of care when addressing pain relief in postoperative patients. Although important to individualize care, it is imperative to engage nurses and providers in the standardized use of all components of the comfort bundle to successfully reduce use of opioids. Maternity nurses were passionate about implementation of this initiative, due to their understanding of the impact the opioid epidemic has on our community and country. Consider performing baseline medical record audits to determine use of nonpharmacologic strategies such as repositioning, ambulation, abdominal binders, and consider incorporating additional nonopioid comfort strategies, such as gum chewing into standard postop care. Although common multimodal postoperative pain relief strategies may already be ordered, such as simethicone, acetaminophen, and ibuprofen, audits may reveal limited or nonstandard use of these strategies, which may result in subpar pain relief and increased reliance on opioids.

Providers at our institution were tasked with reducing the overall MME prescribed to patients at discharge after cesarean birth by 10%. Because many patients were using oxycodone 10 mg fairly regularly for their pain relief while in the hospital, we recognized providers may meet resistance from patients when reducing the amount of opioid prescribed at discharge and that patients may feel unprepared to manage their pain once home. Other researchers have found that after cesarean birth women are prescribed more opioids than necessary to effectively manage their pain (Bateman et al., 2017; Osmundson et al., 2017) and reducing the number of opioids prescribed does not impact the refill rate (Prabhu et al., 2018).

Osmundson et al. (2017) reported that providers often do not take into consideration the amount of opioid consumed during their hospitalization when making decisions about discharge prescriptions. According to the CDC (2018), most often, 3 days or less of opioids are sufficient to provide effective pain relief and more than 7 days is rarely needed. Systemic opioids may not be necessary for all patients postoperatively (Chou et al., 2016). Individualized assessment is necessary to determine if opioids are required for effective pain relief after discharge. By taking the time to understand the process used when writing discharge prescriptions, we identified an area of opportunity to reduce the overall amount of oxycodone prescribed to patients at discharge, particularly among the subset of patients who had not taken any oral opioids during their inpatient stay. Encouraging providers to wait until the day of discharge before writing discharge prescriptions, and to review the amount of opioids the patient consumed while inpatient before writing discharge prescriptions afforded the opportunity to have a thoughtful conversation with the patient about how much, if any, oxycodone they felt they needed in order to achieve effective pain relief after discharge.

Effective postoperative pain control directly influences patient satisfaction (Ozmete et al., 2016). To ensure nurses were not being overly restrictive in the provision of oxycodone, which in turn could influence patient satisfaction, comfort and long-term outcomes, we monitored unit-specific patient experience scores. We continue to see improvements in our patient satisfaction scores specific to *communication about pain* as well as in the measure related to *how well pain was controlled* during the inpatient stay.

Clinical Implications

- Nurses may rely on higher than necessary doses of opioids to treat postoperative pain.
- Preoperative acetaminophen reduces pain and opioid consumption postoperatively consider administration prior to cesarean birth.
- Routine use of an abdominal binder may improve comfort after cesarean.
- Regular use of simethicone can reduce severity of postoperative gas pain and bloating.
- Gum chewing postcesarean birth may improve bowel motility.
- Regularly scheduled doses of acetaminophen and ibuprofen may decrease use of opioids needed for postoperative pain management.
- Patient, nurse, and physician education on the importance of using multimodal comfort strategies can influence the amount of opiates used in the inpatient setting and prescribed at discharge.
- A collaborative team approach to this important clinical issue can be successful in changing practice to decrease use of opioids for women giving birth via cesarean.

Clinical Implications

Interdisciplinary collaboration was key to the success of this quality improvement initiative. Providers may be prescribing and nurses may be giving higher doses of opioid medications than necessary postoperatively for women giving birth via cesarean. Similar to recent findings by Smith, Young, Blosser, and Poole (2019), we found that implementing a multimodal approach to pain management results in the use of much lower doses of opioid medications in women after cesarean. Future research should focus on how the addition of nonpharmacologic therapies such as aromatherapy and music to the comfort bundle could influence comfort in this population. Better understanding of sociodemographic and obstetrical variables that influence inpatient opioid consumption may help to better individualize comfort strategies. ✣

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