NCPD 2.5 ANCC Contact Hours

Abstract

Background: The opioid epidemic is a public health emergency in the United States, stemming in part from widespread misuse and overprescribing of opioids following surgery. Approximately 1 in 300 women with no prior exposure to opioids develops an opioid use disorder following cesarean birth. Effective management of postcesarean pain requires individualized treatment and a balance of the woman's goals for optimal recovery and ability to safely care for her newborn. The American College of Obstetricians and Gynecologists recommends a multimodal approach to pain management after cesarean birth.

Methods: In April 2019, a multidisciplinary team was formed at New York University Langone Health to study opioid use postcesarean. The team used the Plan, Do, Study, Act process model for continuous quality improvement to launch a postcesarean pathway called "Your Plan After Cesarean," a standardized visual tool with quantifiable milestones. It facilitates integration of women's preferences in their postcesarean care, and emphasizes providers' routine use of nonpharmacological interventions to manage pain.

Results: During the pilot period of the project, postcesarean high consumption of 55 to 120 mg of opioids was reduced from 25% to 8%. By January 2020, 75% of women postoperative cesarean took little-to-no opioids during their hospital stay. By February 2021, the total number of opioids consumed by women after cesarean birth in-hospital was reduced by 79%. Satisfaction among women with pain management after cesarean continued to be high.

Clinical Implications: Reduction in postcesarean opioid administration and the number of opioids prescribed at hospital discharge can be accomplished without having a negative effect on women's perceptions of post-op pain relief. These changes can potentially be a factor in helping to avoid an opioid-naive woman who has a cesarean birth from developing an opioid use disorder.

Key words: Analgesia; Cesarean; Multimodal; Opioid; Pain; Quality improvement.

A QUALITY IMPROVEMENT PROJECT TO REDUCE POSTCESAREAN OPIOID CONSUMPTION

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Opioid misuse is an epidemic in the United States (Health Resources and Services Administration, 2020). In 2018, it is estimated that over 10 million people misused prescription opioids and over 18,000 deaths were caused by prescription opioid overdose (U.S. Department of Health and Human Services [USHHS], 2020). In 2017, USHHS declared the opioid epidemic a public health emergency in part from misuse of medications prescribed for treatment of acute pain, often following surgery (USHHS). Cesarean birth is one of the most common major surgical procedures in the U.S. (McDermott et al., 2017) and those recovering from cesarean are frequently prescribed opioids for pain management (Gamez & Habib, 2018). In 2019, there were about 1.2 million cesarean births, representing 31.7% of all U.S. births (Hamilton et al., 2020).

New York University Langone Health (NYULH) Tisch Hospital is an academic medical center located in Manhattan with ~6,000 births annually, including ~27% via cesarean. Adequate pain management after cesarean birth is an important concern for women and their maternity care team. Opioids have historically been the primary means for managing postoperative pain at NYULH.

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Cesarean birth is one of the most common major surgeries in the United States.

Up until April 2019, women who gave birth by cesarean at NYULH received epidural patient-controlled analgesia (EPCA) containing fentanyl, bupivacaine, and epinephrine for up to 48 hours postpartum. The EPCA was typically set with a basal rate of 10 to 15 mL/hour and women who were post-op cesarean could give themselves a bolus dose typically of 3 mL up to six times an hour. They also received scheduled intravenous (IV) ketorolac 30 mL and oral acetaminophen 650 mg alternating every 3 hours. After the EPCA was removed by the pain management team, typically on post-operative cesarean day two, the women continued to receive scheduled round-the-clock alternating oral ibuprofen 600 mg and acetaminophen 650 mg, and oxycodone 5 mg or 10 mg as needed. Informed by evidence that women who receive opioids following cesarean birth are at increased risk for developing substance use disorders, in April 2019 the senior director of nursing identified the need to both standardize care after cesarean birth and reduce opioid consumption in-hospital and on discharge. A multidisciplinary quality improvement team was convened.

Available Knowledge

Multiple factors influence experience of pain after cesarean birth, including type of surgical incision, prior negative experience, pain perception, and psychosocial factors such as perceived loss of control over decision-making. For these reasons, women may experience worse pain with cesarean surgery than with other surgical procedures such as hysterectomy (Schoenwald et al., 2018). Women who give birth via cesarean rank avoidance of pain during and after surgery as their highest priority (Sutton & Carvalho, 2017). Inadequate postcesarean pain management may impair parental independence and parent–newborn bonding, decrease breast- or chest-feeding and participation in newborn care, and increase risk for postpartum depression (Burgess et al., 2019; Gamez & Habib, 2018).

The American College of Obstetricians and Gynecologists (ACOG) recommends using opioids as postcesarean "breakthrough" analgesia only when patients do not experience adequate pain relief from nonopioid medications and complementary nonpharmacological treatments (ACOG, 2018). However, opioids, usually oxycodone, are routinely prescribed, often in excess of need, for pain relief after cesarean birth (Dinis et al., 2020; Holland et al., 2019; Macones et al., 2019; Schoenwald et al., 2018; Smith et al., 2019). Side effects such as nausea, vomiting, constipation, and drowsiness are common, which may make recovery and

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care of newborns more difficult (Holland et al.) and may increase risk of in-patient newborn falls (Galuska, 2011; Lipke et al., 2018).

The rise of opioid misuse in the United States has been linked to overprescribing postsurgery and associated increased availability of unused opioids in the community (Badreldin et al., 2018). Routine, nonindividualized prescribing habits can lead to increased opioid consumption, both in-hospital and on discharge, and potentially lead to long-term dependency (Bateman et al., 2016). However, overly cautious prescribing of opioids may have a negative impact on adequate pain control and full recovery (ACOG, 2018). A recent study estimated 1 in 300 women who are opioid naive prior to cesarean birth become chronic opioid users (Bateman et al.). Women having two or more comorbidities, including anxiety and depression and obesity, and women of advanced birthing age, may be especially at risk for opioid dependency (Badreldin et al., 2016; Emerson et al., 2013).

ACOG (2018) recommends use of two or more different methods or medications to manage post-op pain, with nonopioid analgesia as first-line therapy, recognizing after cesarean birth, women may experience pain from incisional trauma, inflammation, uterine muscle contractions, and gas (Burgess et al., 2019). This can be successful for postcesarean pain relief, while minimizing use of opioids (ACOG, 2018; Smith et al., 2019). Although many patients experience effective pain relief post-op with concurrent around-the-clock administration of oral ibuprofen and acetaminophen, others may require opioids for pain flare-ups (Carvalho & Butwick, 2017; Sutton & Carvalho, 2017). Obstetricians and pain management teams are charged with balancing adequate analgesia for patients and limiting excess opioids (Carrico et al., 2020). Educating women about opioids and engaging in shared decision-making can decrease opioid prescribing on discharge (Prabhu et al., 2018). When women feel empowered to express their desires about postcesarean pain relief, acceptable medication side effects, and goals for discharge, their experience of postcesarean pain and pain management may be improved (Carvalho & Habib, 2019).

Researchers have recently explored whether initiatives aimed at decreasing in-hospital administration of postcesarean opioids and changing prescriber habits may be associated with a reduction in postpartum opioid use or misuse while maintaining satisfactory pain relief. In a randomized, controlled trial, individualizing opioid prescriptions based on in-hospital use versus prescribing a set number and dose of opioids to all women substantially reduced the total amount of opioids used postcesarean without affecting pain outcomes (Osmundson et al., 2018). In a quality improvement project, after physicians were asked to stop routinely ordering opioids for postcesarean pain management, the number of women who received opioids during their hospital stay decreased from 68% to 45% and the number of women who were discharged with any opioid prescription decreased from 90% to 40% without affecting patient satisfaction with post-op pain management (Holland et al., 2019). A randomized equivalence trial found postcesarean pain scores for patients taking only nonopioid pain relievers were lower than for patients taking these medications plus opioids (Dinis et al., 2020), consistent with other studies finding that patients exposed to opioids have decreased pain thresholds and perceive stimuli as more painful as compared with patients who do not take opioids. This condition of hyperalgesia notably contributes to opioid tolerance (Dinis et al.). A quality improvement project used a standardized "comfort bundle" to improve postoperative comfort while reducing exposure to opioids. It emphasized nonpharmacological interventions for postcesarean pain relief such as splinting abdominal incisions with an abdominal binder, early ambulation and regular voiding, and gum chewing to improve bowel motility (Burgess et al., 2019).

Context

The multidisciplinary team set goals of (1) decreasing postcesarean opioid consumption by in-patients and (2) decreasing the number of opioids prescribed for discharge. Physicians and nurse practitioners specializing in pain management presented supporting evidence suggesting signs and symptoms of physical dependency, craving, and withdrawal begin occurring around 50 to 60 mg of total opioid ingestion. Preliminary data showed a broad range of opioid consumption among women after cesarean birth. The pain management providers suggested creating defined thresholds so the team could better evaluate for problematic opioid use and individualize their opioid use reduction interventions. Opioid (oxycodone or morphine milliequivalent [MME]) consumption in the hospital was categorized by the pain management team into four groups: zero use (0 mg), low use (5–20 mg), moderate use (25–50 mg), and high use (55–120 mg). Data in April 2019 indicated 25% of women post-op cesarean were in the high use category and 25% in the medium use category.

Mother–baby nurses and multidisciplinary team huddles revealed various practices among obstetricians, midwives, physician assistants, and nurse practitioners for postoperative care and pain management regimens after cesarean birth. For example, nurses inconsistently used nonpharmacological interventions such as abdominal binders, mint tea, heat or warm packs, and chewing gum for relief of incisional pain and gas discomfort. Yet in all cases reviewed, women were discharged home after cesarean birth with oxycodone prescriptions that exceeded use of oxycodone during the hospital stay, in part because obstetricians placed discharge prescription orders on the day of surgery rather than day of discharge as part of their standard postpartum order set.

Intervention

The team set a goal of increasing the number of women in the zero-to-low opioid use categories from 50% to 90%. Using the Plan, Do, Study, Act process model for continuous quality improvement projects, in April 2019 the team developed and subsequently launched a postce-

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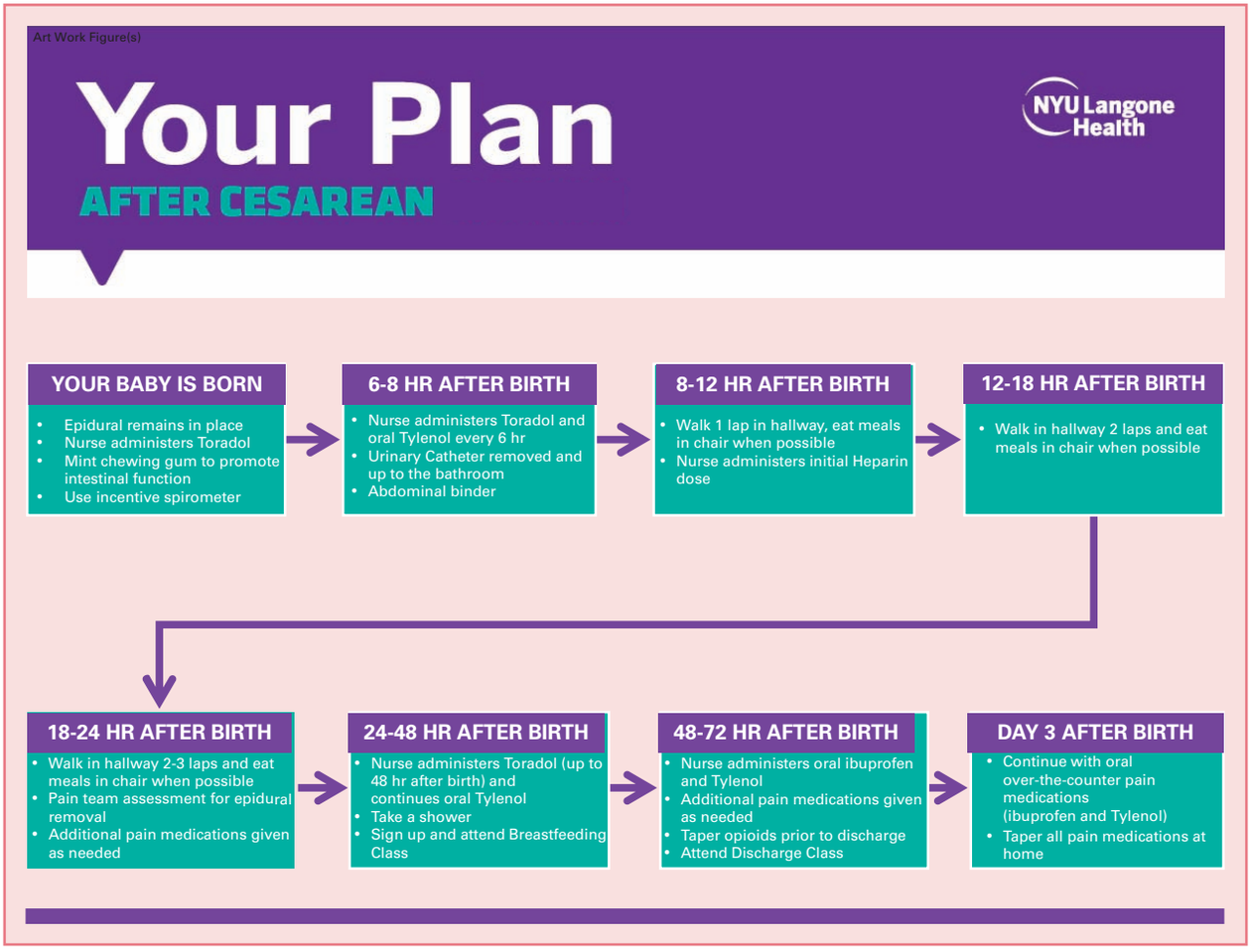
FIGURE 1.



sarean care pathway entitled "Your Plan After Cesarean" (Figure 1). Nurses share the pathway with women having cesarean birth postoperatively on their admission to the mother–baby unit. Your Plan is a visual tool for engaging women in a discussion about their goals for pain management, consistent with many U.S. hospitals that have made enhanced recovery after surgery programs standard care for managing postoperative pain and improving recovery (Hedderson et al., 2019).

Your Plan facilitates shared decision-making between patients and their obstetricians, midwives, physician assistants, nurse practitioners, and the pain management team about post-op recovery goals, and has quantifiable milestones to ensure adequate progress toward safe discharge. These include 6- to 8-hour post-op removal of the indwelling urinary catheter, independent ambulation by 8 to 12 hours, and removal of the EPCA by 24 hours postpartum. Based on the pain management team's recommendation, alternating administration of ketorolac or ibuprofen and acetaminophen was changed to concurrent administration of these medications, increasing their synergistic effect. As a result, there was a 50% decrease in the number of nurse medication passes, reducing nursing workload and decreasing the number of patient interruptions (Sutton & Carvalho, 2017).

As some women may experience significant gas pain after cesarean birth, and consequently take opioids (Burgess et al., 2019), the team emphasized first-line use of the antiflatulent simethicone and hot water or mint tea to reduce gas discomfort at the same time as regularly scheduled ibuprofen and acetaminophen. Women were encouraged to chew gum to promote early return of bowel motility and ability to pass gas (Burgess et al.). Although there is conflicting evidence about whether abdominal binders improve pain relief after cesarean birth, they allow for easier repositioning and ambulation (Burgess et al.). Your Plan recommends application of an abdominal binder within 6 to 8 hours after birth to splint the cesarean incision during movement.

Nurses were encouraged at daily unit huddles to use language promoting individualized evaluation of their patients' comfort, for example, writing on patients' white boards "your next pain assessment will occur" instead of "your next medication is due." Use of nonpharmacological pain relief interventions including gum, mint tea, hot water, and warm packs were promoted. Nurses were en-

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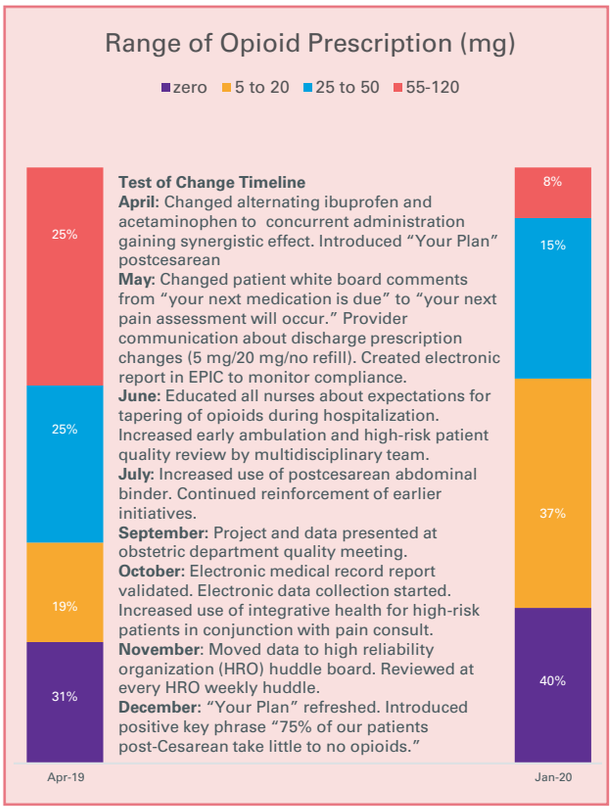
FIGURE 2. POSTCESAREAN BIRTH PAIN MANAGEMENT PATHWAY TIMELINE



couraged to place integrative health consults for women who expressed interest in complementary pain management modalities such as guided imagery and mindfulness, contact the social worker for those whose history of anxiety and depression, traumatic birth, or postbirth experiences might present barriers to optimal recovery, and notify the pain management team about those who continued to report unrelieved postcesarean pain. Beginning in 2020, nurses used an audit form for pain huddles for all women after cesarean birth reaching total opioid consumption ≥ 20 mg MME to help inform routine use of multimodal pain management interventions.

Your Plan does not mandate that nurses withhold opioids, but rather supports them having conversations with patients about the full scope of nonopioid pain relief available. Nurses were encouraged to characterize opioids as rescue medications, rather than medications that are offered or due at set times. Your Plan calls for an opioid taper in the hospital that continues after discharge. Nurses educate their patients about opioid tapering expectations, including the importance of gradually decreasing their opioid consumption during hospitalization, and encourage them to continue this practice after discharge. For example, if a woman takes 10 mg oxycodone for postcesarean pain relief, and 4 hours later, requests another 10 mg, the nurse may advise them to try 5 mg and use another nonpharmacological pain-relieving strategy such as a hot shower, walk around the unit, or focused breathing.

In May 2019, obstetricians began tailoring discharge prescriptions of opioids to align with in-patient consumption. They were urged to limit their prescriptions to a total of twenty 5 mg pills of oxycodone and compliance was monitored. The chief of obstetrics discussed prescribing patterns exceeding the limit or varying widely from patients' in-hospital opioid use, with individual physicians. At weekly high reliability organization mother–baby unit meetings, progress and findings were discussed and feedback from nurses solicited.

Study of the Intervention

Analysis

In May 2019, individual reviews and extraction of data from the medical records of women having cesarean birth including their in-hospital opioid use were conducted. This was time-consuming, so an electronic medical record report was developed in July 2019 that could be run frequently to monitor physician compliance with limited opioid discharge prescriptions. Elements reviewed via the report included attending physician, mode of birth, and names and total doses of the opioids consumed during hospitalization. These data were reviewed monthly and used to inform each phase of the intervention. Patient satisfaction data were analyzed for patient feedback of how well their pain was managed in the hospital. Data were reviewed weekly with nurses and team members on the mother–baby unit, and nurse input was sought.

Results

During the pilot phase April 2019 to January 2020, there was decreased postcesarean birth opioid use. High consumption of opioids in-hospital was decreased to 8% of women after cesarean birth by January 2020. By January 2020, 77% of women postcesarean took little-to-no opioids during their hospital stay. Baseline data extracted prior to the pilot phase indicated that 72% of women postcesarean were ingesting 25 mg to 120 mg of oral oxycodone or MME after removal of the EPCA and during their hospital stay. Postimplementation, only 23% of women after cesarean birth consumed more than 20 mg total opioids during their hospital stay. For the population in the highest use category (55–120 mg), opioid use decreased in the pilot phase from 25% (average 32 per month) to 8% (average 10 per month; Figure 2). Patient-sensitive prescribing, that is, tailoring discharge prescriptions to individual patients' postoperative opioid use, increased the number of patients prescribed less than 20 oxycodone tablets from 80% preintervention to 92% postintervention (Figure 3). These improvements represented an average decrease of 22 women per month exposed to amounts of opioids that could increase their risk for developing a substance use disorder, and an average decrease of 20 women per month in the community with access to excess opioids. By January 2020, the number of women who received little-to-no opioids (0 to ≤ 20 mg) during their stay at NYULH increased from 50% to over 70%. In

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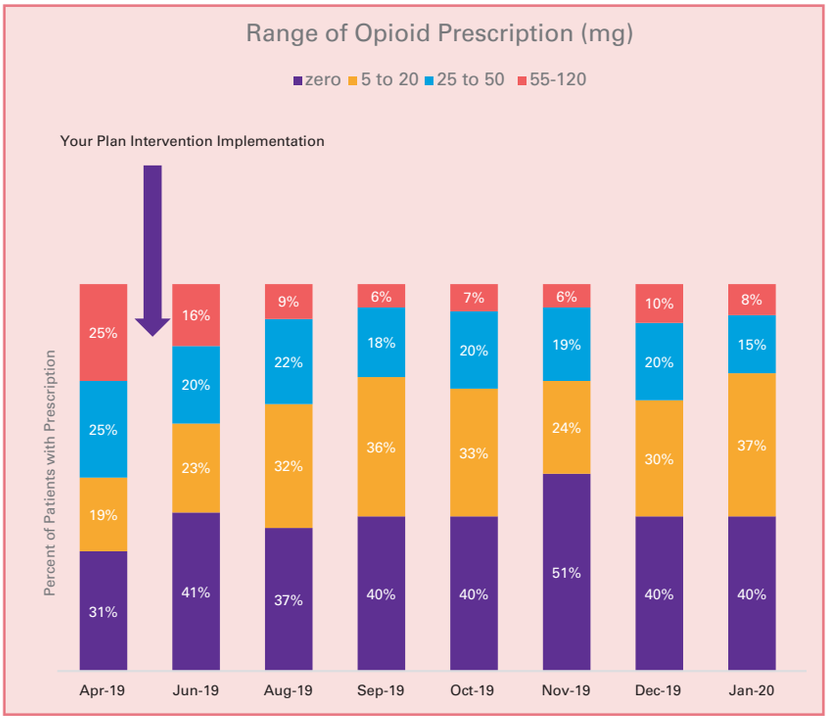
the period September 2019 to November 2019, the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPs) patient satisfaction survey required by the Centers for Medicare & Medicaid Services affirmed the positive impact, with 90.3% of respondents answering "always" to the question "how well was your pain controlled?"

In April 2020, mother–baby nurses began conducting pain huddles with the primary nurse, charge nurse, and the woman's obstetrician or mother–baby physician assistant when a woman consumed 20 or more mg of opioids during her hospital stay. Using an audit form, pain huddle participants strategized next steps and created tailored multimodal pain management interventions. By July 2020, the number of women postcesarean birth consuming no opioids during their hospital stay increased to 43% (59 of 137 patients). For the first three quarters of 2020, the HCAHPs patient satisfaction survey supported the sustainable positive impact of Your Plan, with over 85% of respondents consistently stating their pain was well controlled during their hospital stay. Data analysis of opioid use in-hospital by women postcesarean after implementation of Your Plan, April 2019 to February 2021 found a 79% reduction in the number of opioids consumed (Figure 4).

FIGURE 3. POSTCESAREAN BIRTH PAIN MANAGEMENT PATHWAY OPIOID PRESCRIPTIONS OVER TIME



Clinical Implications

With its focus on nurse–patient collaboration, early mobility, and timely removal of the indwelling urinary catheter and EPCA, Your Plan supports a woman having cesarean birth quickly regaining independence after surgery. Nurses and their patients collaborating on achievable targeted postcesarean goals can help them transition to discharge. Opioids have been reframed as rescue medications, meant to be used sparingly and only when necessary to bridge the gap between the EPCA and oral over-the-counter medications, rather than as necessary scheduled medications postsurgery. Your Plan provides a pathway for success for women at home after discharge because it encourages them to be active participants in their care and recovery in the hospital.

Our results may not be generalizable to other hospitals, where, for example, women receive intrathecal opioids postcesarean. Literature review revealed only one quality improvement intervention describing postcesarean pain management for women who, like the patients at NYULH, have an EPCA in place for a usual minimum of 24 hours postcesarean (Blitz et al., 2020). They sought to decrease opioid use post-EPCA removal by scheduling oxycodone administration along with acetaminophen and ibuprofen, but findings did not support the intervention as effective for reducing in-hospital opioid use. The intervention described by Blitz et al. (2020) is different from Your Plan because Your Plan seeks in part to reduce in-hospital use of opioids by characterizing opioids as rescue medications available only on an as-needed basis, not as scheduled pain relief. Some have been critical of postpartum use of continuous EPCAs to control postcesarean pain because they may decrease mobility, complicate anticoagulation prophylaxis, increase nursing workload, and add to overall inpatient costs (Sutton & Carvalho, 2017).

During the height of the COVID-19 pandemic in New York City March and April 2020, NYULH observed increased discharge prescribing of opioids in the postcesarean population (Figure 4). Women with a history of anxiety and depression are at increased risk for developing opioid use disorders (Emerson et al., 2013). Social distancing recommendations during COVID-19 further isolate women who may already be predisposed to postpartum mood and anxiety disorders due to a traumatic birth experience or other factors.

Cesarean birth creates risk for women who are opioid naive to develop opioid use disorders. Best practices for pain management after cesarean birth dictate individualized and tailored opioid prescribing practices, around-the-clock dosing of nonopioid pain medications, and routine use of nonpharmacological interventions promoting early mobility and parental independence. Our project created measurable and sustainable positive changes in postcesarean in-hospital opioid use and obstetrician discharge prescribing practices. ✣

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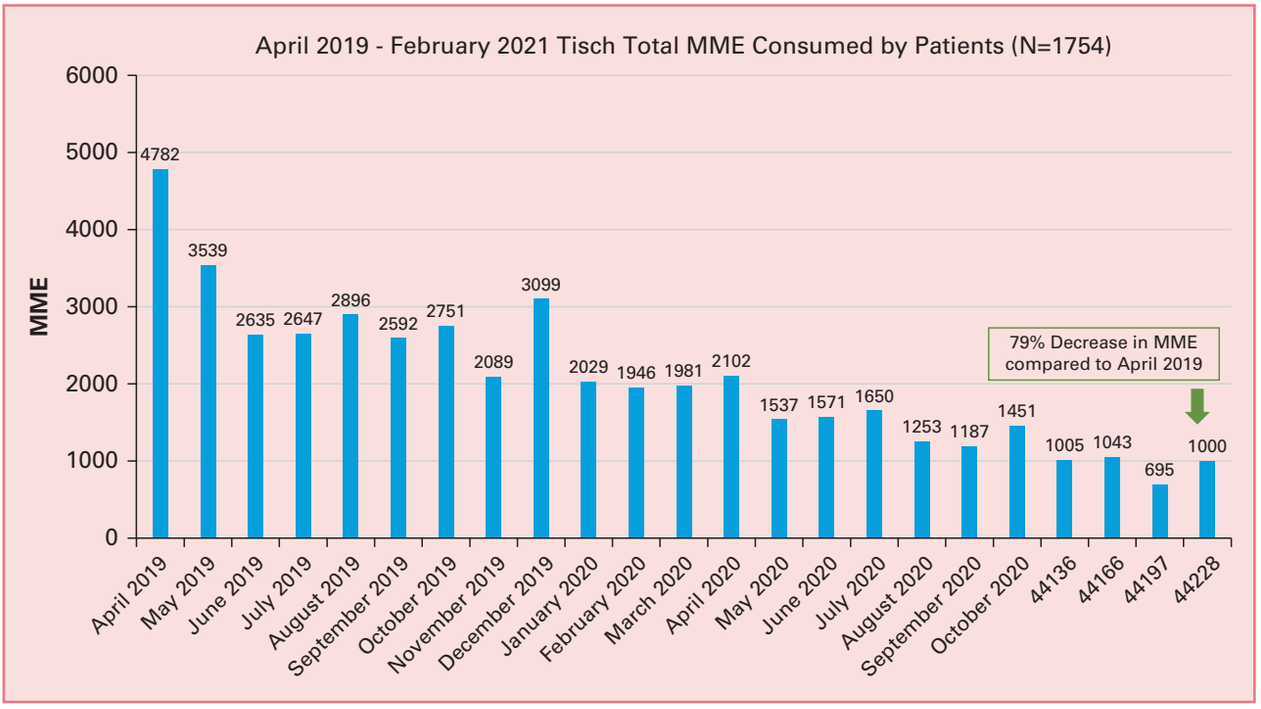
FIGURE 4.



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The authors declare no conflicts of interest.

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References

American College of Obstetricians and Gynecologists. (2018). Postpartum pain management (Committee Opinion No. 742). *Obstetrics and Gynecology, 132*(1), e35–e43. https://doi.org/10.1097/AOG.0000000000002683

Badreldin, N., Grobman, W. A., Chang, K. T., & Yee, L. M. (2018). Patient and health care provider factors associated with prescription of opioids after delivery. *Obstetrics and Gynecology, 132*(4), 929–936. https://doi.org/10.1097/AOG.0000000000002862

Bateman, B. T., Franklin, J. M., Bykov, K., Avorn, J., Shrank, W. H., Brennan, T. A., Landon, J. E., Rathmell, J. P., Huybrechts, K. F., Fischer, M. A., & Choudhry, N. K. (2016). Persistent opioid use following cesarean delivery: Patterns and predictors among opioid-naïve women. *American Journal of Obstetrics and Gynecology, 215*(3), 353.e1–353.e18. https://doi.org/10.1016/j.ajog.2016.03.016

Blitz, M. J., Rochelson, B., Prasannan, L., Stoffels, G. J., Pappas, K., Pallaschi, G. T., & Marchbein, H. (2020). Scheduled versus as-needed postpartum analgesia and oxycodone utilization. *The Journal of Maternal-Fetal and Neonatal Medicine, 20,* 1–9. https://doi.org/10.1080/14767058.2020.1742318

Burgess, A., Harris, A., Wheeling, J., & Dermo, R. (2019). A quality improvement initiative to reduce opioid consumption after cesarean birth. *MCN. The American Journal of Maternal Child Nursing, 44*(5), 250–259. https://doi.org/10.1097/NMC.0000000000000549

Carrico, J. A., Mahoney, K., Raymond, K. M., McWilliams, S. K., Mayes, L. M., Mikulich-Gilbertson, S. K., & Bartels, K. (2020). Predicting opioid use following discharge after cesarean delivery. *Annals of Family Medicine, 18*(2), 118–126. https://doi.org/10.1370/afm.2493

Carvalho, B., & Butwick, A. J. (2017). Postcesarean delivery analgesia. *Best Practice and Research. Clinical Anaesthesiology, 31*(1), 69–79. https://doi.org/10.1016/j.bpa.2017.01.003

Carvalho, B., & Habib, A. S. (2019). Personalized analgesic management for cesarean delivery. *International Journal of Obstetric Anesthesia, 40*, 91–100. https://doi.org/10.1016/j.ijoa.2019.02.124

Dinis, J., Soto, E., Pedroza, C., Chauhan, S. P., Blackwell, S., & Sibai, B. (2020). Nonopioid versus opioid analgesia after hospital discharge following cesarean delivery: A randomized equivalence trial. *American Journal of Obstetrics and Gynecology, 222*(5), 488.e1–488.e8. https://doi.org/10.1016/j.ajog.2019.12.001

Emerson, J. B., Danilack, V. A., Kulkarni, A., Kesselring, C., Brousseau, E. C., & Matteson, K. A. (2013). Outpatient opioid use after cesarean delivery. *Rhode Island Medical Journal, 103*(6), 68–74.

Galuska, L. (2011). Prevention of in-hospital newborn falls. *Nursing for Women's Health, 15*(1), 59–61. https://doi.org/10.1111/j.1751-486x.2011.01611.x

Gamez, B. H., & Habib, A. S. (2018). Predicting severity of acute pain after cesarean delivery: A narrative review. *Anesthesia and Analgesia, 126*(5), 1606–1614. https://doi.org/10.1213/ANE.0000000000002658

Hamilton, B. E., Martin, J. A., & Osterman, M. J. K. (2020). *Births: Provisional data for 2019* (Vital Statistics Rapid Release No. 8). National Center for Health Statistics. https://www.cdc.gov/nchs/data/vsrr/vsrr-8-508.pdf

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CLINICAL IMPLICATIONS OF YOUR PLAN IMPLEMENTATION

- Shared decision making between mother–baby nurses and women after cesarean birth with the goal of achieving adequate pain management while reducing in-hospital and post discharge opioid consumption can be successful.
- Early removal of EPCA on postoperative day one along with around-the-clock dosing of ibuprofen 600 mg and acetaminophen 650 mg, and oxycodone or its MME characterized as a rescue medication reduces in-hospital opioid use.
- Real-time, data-driven identification of high-risk patients and consequent pain huddle with primary nurse, charge nurse, and obstetrician or mother–baby physician assistant for women whose in-hospital use of opioids met or exceeded 20 mg, helps identify those at risk for opioid misuse.
- Discharge prescriptions targeted to in-hospital use reduces the availability of unused opioids in the community.
- Standard use of nonpharmacological pain modalities including abdominal binders, gum, tea, and integrative health and social work consults augments pharmacological interventions for pain relief.

Health Resources and Services Administration. (2020). *Opioid crisis*. https://www.hrsa.gov/opioids

Hedderson, M., Lee, D., Hunt, E., Lee, K., Xu, F., Mustille, A., Galin, J., Campbell, C., Quesenberry, C., Reyes, V., Huang, M., Nicol, B., Paulson, S., & Liu, V. (2019). Enhanced recovery after surgery to change process measures and reduce opioid use after cesarean delivery: A quality improvement initiative. *Obstetrics and Gynecology, 134*(3), 511–519. https://doi.org/10.1097/AOG.0000000000003406

Holland, E., Bateman, B. T., Cole, N., Taggart, A., Robinson, L. A., Sugrue, R., Xu, X., & Robinson, J. N. (2019). Evaluation of a quality improvement intervention that eliminated routine use of opioids after cesarean delivery. *Obstetrics and Gynecology, 133*(1), 91–97. https://doi.org/10.1097/AOG.0000000000003010

Lipke, B., Gilbert, G., Shimer, H., Consenstein, L., Aris, C., Ponto, L., Lafaver, S., & Kowal, C. (2018). Newborn safety bundle to prevent falls and promote safe sleep. *MCN. The American Journal of Maternal Child Nursing, 43*(1), 32–37. https://doi.org/10.1097/NMC.0000000000000402

Macones, G. A., Caughey, A. B., Wood, S. L., Wrench, I. J., Huang, J., Norman, M., Pettersson, K., Fawcett, W. J., Shalabi, M. M., Metcalfe, A., Gramlich, L., Nelson, G., & Wilson, R. D. (2019). Guidelines for postoperative care in cesarean delivery: Enhanced Recovery After Surgery (ERAS) Society recommendations (part 3). *American Journal of Obstetrics and Gynecology, 221*(3), 247.e1–247.e9. https://doi.org/10.1016/j.ajog.2019.04.012

McDermott, K. W., Freeman, W. J., & Elixhauser, A. (2017). *Overview of operating room procedures during inpatient stays in U.S. hospitals, 2014* (HCUP Statistical Brief No. 233). Agency for Healthcare Research and Quality. www.hcupus.ahrq.gov/reports/statbriefs/sb233-Operating-Room-Procedures-United-States-2014.pdf

Osmundson, S. S., Raymond, B. L., Kook, B. T., Lam, L., Thompson, E. B., Schornack, L. A., Voorhees, C. E., & Richardson, M. G. (2018). Individualized compared with standard postdischarge oxycodone prescribing after cesarean birth: A randomized controlled trial. *Obstetrics and Gynecology, 132*(3), 624–630. https://doi.org/10.1097/AOG.0000000000002782

Prabhu, M., Dubois, H., James, K., Leffert, L. R., Riley, L. E., Bateman, B. T., & Henderson, M. (2018). Implementation of a quality improvement initiative to decrease opioid prescribing after cesarean delivery. *Obstetrics and Gynecology, 132*(3), 631–636. https://doi.org/10.1097/AOG.0000000000002789

Schoenwald, A., Windsor, C., Gosden, E., & Douglas, C. (2018). Nurse practitioner led pain management the day after caesarean section: A randomised controlled trial and follow-up study. *International Journal of Nursing Studies, 78*, 1–9. https://doi.org/10.1016/j.ijnurstu.2017.08.009

Smith, A. M., Young, P., Blosser, C. C., & Poole, A. T. (2019). Multimodal stepwise approach to reducing in-hospital opioid use after cesarean delivery: A quality improvement initiative. *Obstetrics & Gynecology, 133*(4), 700–706. https://doi.org/10.1097/AOG.0000000000003156

Sutton, C. D., & Carvalho, B. (2017). Optimal pain management after cesarean delivery. *Anesthesiology Clinics, 35*(1), 107–124. https://doi.org/10.1016/j.anclin.2016.09.010

United States Department of Health and Human Services. (2020). *What is the U.S. opioid epidemic?* https://www.hhs.gov/opioids/about-the-epidemic/index.html

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A Quality Improvement Project to Reduce Postcesarean Opioid Consumption

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