Evaluating the Long-term Impact of Implementing Standardized Postoperative Opioid Prescribing Recommendations Following Pelvic Organ Prolapse Surgery

Importance Improving opioid stewardship is important, given the common use of opioids and resultant adverse events. Evidence-based prescribing recommendations for surgeons may help reduce opioid prescribing after specific procedures.

Objective The aim of this study was to assess longitudinal prescribing patterns for patients undergoing pelvic organ prolapse surgery in the 2 years before and after implementing evidence-based opioid prescribing recommendations.

Study Design In December 2017, a 3-tiered opioid prescribing recommendation was created based on prospective data on postoperative opioid use after pelvic organ prolapse surgery. For this follow-up study, prescribing patterns, including quantity of opioids prescribed (in oral morphine equivalents [OMEs]) and refill rates, were retrospectively compared for patients undergoing prolapse surgery before (November 2015–November 2017; n = 238) and after (December 2017–December 2019; n = 361) recommendation implementation. Univariate analysis was performed using the Wilcoxon rank sum and χ^2 tests. Cochran-Armitage trend tests and interrupted time-series analysis tested for significance in the change in OMEs prescribed before versus after recommendation implementation.

Results After recommendation implementation, the quantity of postoperative opioids prescribed decreased from median 225 mg OME (interquartile range, 225, 300 mg OME) to 71.3 mg OME (interquartile range, 0, 112.5 mg OME; $P < 0.0001$). Decreases also occurred within each subgroup of prolapse surgery: native tissue vaginal repair ($P < 0.0001$), robotic sacrocolpopexy ($P < 0.0001$), open sacrocolpopexy ($P < 0.0001$), and colpocleisis ($P < 0.003$). The proportion of patients discharged following prolapse surgery without opioids increased (4.2% vs 36.6%; $P < 0.0001$), and the rate of opioid refills increased (2.1% vs 6.0%; $P = 0.02$).

Conclusions With 2 years of postimplementation follow-up, the use of procedure-specific, tiered opioid prescribing recommendations at our institution was associated with a significant, sustained reduction in opioids prescribed. This study further supports using evidence-based recommendations for opioid prescribing.

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WHY THIS MATTERS

In the era of ever-increasing awareness of the importance of opioid stewardship among surgeons, our study seeks to highlight how development and implementation of evidence-based, procedure-specific opioid prescribing recommendations were associated with sustained changes in postoperative opioid prescribing. Importantly, opioid refills did increase, but the real-world impact of this remains low, given the low frequency of refills and ease of e-prescribing. Our study focuses specifically on postoperative opioid prescribing after pelvic organ prolapse surgery. Other studies, such as a 2021 article by Findlay et al outlining opioid prescribing recommendations for multiple urologic procedures, have demonstrated similar efficacy in reducing

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opioid prescribing with more standardized recommendations. Our study augments the current literature for prolapse procedure-specific postoperative opioid prescribing recommendations.

The U.S. Food and Drug Administration has previously declared opioid use and misuse a national emergency. Opioids are associated with adverse events such as persistent opioid use, diversion, overdose, and drug-related mortality.[1–3] This growing concern has prompted examination of postoperative opioid prescribing as one avenue to improve opioid stewardship. Opioids are used for most postoperative analgesia regimens, and surgeons prescribe approximately 10% of all opioids in the United States. Prior studies have identified significant variability in the quantity of opioids prescribed on hospital discharge, and these are often more than patients use, particularly for minor surgical procedures.[4–6] Previously, there was limited procedure-specific guidance related to opioid prescribing following surgery for pelvic organ prolapse.

Therefore, in 2017, we conducted a prospective study to develop evidence-based recommendations for opioid prescribing after prolapse surgery based on patient's postoperative use, assessed by pill count.[5] From this, a tiered recommendation for opioid prescribing was implemented within our institution based on in-hospital opioid use. Within our practice, in the short term (4 months), the volume of opioids prescribed decreased by 45% after implementation.[5] Medication refill rates did increase, but there was no adverse impact on patient satisfaction.[5] Since then, national clinical guidance documents have further outlined strategies for improving postoperative opioid stewardship for prolapse surgery.[7] However, long-term data on the potential sustained impact of these evidence-based interventions on prescribing by health care professionals are lacking.

In this retrospective study, we sought to assess longitudinal opioid prescribing patterns after prolapse surgery at our institution in the 2-year time frames before and after implementing tiered opioid prescribing recommendations. We hypothesized that there would be a significant and sustained decrease in opioids prescribed after recommendation implementation.

MATERIALS AND METHODS

Starting in September 2017, we conducted a prospective study to create a 3-tiered recommendation for opioid prescribing after pelvic organ prolapse surgery. The study cohort included women who were undergoing prolapse surgery (vaginal, robotic, or open abdominal) without opioid medication use within 90 days of surgery. Anti-incontinence procedures were not included in the initial study, and opioid prescribing recommendations were not specifically applied to these procedures. Those undergoing concomitant mesh excision for pain or refused consent were excluded. The recommended prescribing volumes were based on predictors for postoperative opioid use, as well as pill counts assessed via 2-week telephone calls.[5] For those using opioids after dismissal, the prescribing cutoff was designed to meet the needs of 80% of patients, without a refill.[8] The tiered prescribing recommendations were implemented in December 2017 and are shown in Table 1. Prescribers were notified of the 3-tiered recommendation system implementation via in-person conferences/division meetings and e-mail correspondence.

After institutional review board approval, the current study retrospectively evaluated the time frames 2 years before (November 2015–November 2017) and 2 years after (December 2017–December 2019) recommendation implementation and examined opioid prescribing patterns. Administrative billing data were used to identify patients with *Current Procedural Terminology* codes for vaginal, robotic, or open abdominal surgical procedures for apical pelvic organ prolapse, as well anti-incontinence procedures (Appendix 1, http://links.lww.com/FPMRS/A412) In addition, medical records were abstracted to search for opioid prescriptions written in the time between 90 days before and 30 days after hospital discharge.

The current study included women undergoing surgery for pelvic organ prolapse and/or anti-incontinence

TABLE 1. Tiered Opioid Prescribing Recommendation Following Prolapse Surgery Previously Implemented

	Recommended Opioid Prescribing
Tier 0: no in-hospital opioid use	0 mg OME
Tier 1: routine in-hospital opioid use (eg, oxycodone 5–10 mg every 4 h as needed)	112.5 mg OME (eg, 15 pills of oxycodone 5 mg)
Tier 2: increased in-hospital opioid use	Individualized prescribing based on 24-h opioid requirement

OME, oral morphine equivalent.

surgery who were older than 18 years, with no opioid prescriptions within 90 days of the procedure. Patients were excluded if they had complications requiring readmission or return to the operating room within 30 days of their index procedures or refused research consent. Patients were managed with a well-defined enhanced recovery pathway.[9] The enhanced recovery pathway, detailed in previous publications, was implemented via order sets, which included multimodal analgesia such as scheduled acetaminophen, scheduled nonsteroidal anti-inflammatory medications if appropriate, and opioids as needed. Our institutional techniques for native tissue vaginal repairs (anterior colporrhaphy, uterosacral ligament plication, and/or posterior colpoperineorrhaphy), colpocleisis, and open and robotic sacrocolpopexy have previously been described.[10–13] The procedures were performed by 5 fellowship-trained female pelvic medicine and reconstructive surgeons at a single, tertiary care institution.

The type and quantity of opioid medications prescribed at hospital discharge were abstracted from the medical record at any point from 7 preoperative days or during hospitalization. Hospital discharge for prolapse cases occurred for most patients on postoperative day 1. Discharge orders, including opioid prescriptions, were typically written by the resident or fellow working directly with the operating staff surgeon. Given the local effect of the medication, belladonna and opium suppositories were excluded from the opioid totals. The opioids prescribed were converted to equianalgesic equivalents in the form of oral morphine equivalents (OMEs) in milligrams. Prescription refills from our health system within 30 days after hospital dismissal were also recorded.

Opioid prescribing and refill rates were compared by procedure before and after recommendation implementation. Univariate analysis was performed using the Wilcoxon rank sum test for continuous variables and χ^2 tests for categorical variables. Cochran-Armitage trend tests and interrupted time-series analysis were used to test for significance in the change in OMEs prescribed before versus after recommendation implementation. Prescription refills were evaluated as a counterbalance for the initial reduction in prescribing volume.

Analysis was performed for all pelvic organ prolapse procedures combined, subgroups of pelvic organ prolapse (vaginal, abdominal, or robotic, with or without concomitant anti-incontinence procedure), and isolated anti-incontinence procedures. *P* values were considered significant at $P < 0.05$. All statistical analysis was conducted using SAS version 9.4 (SAS Institute Inc, Cary, NC).

RESULTS

Opioid prescribing was compared between patients who underwent prolapse surgery in the 2-year period before (November 2015–November 2017) and after (December 2017–December 2019) tiered opioid prescribing recommendations were implemented. This included 239 patients before the recommendation and 382 after. After implementation, the median volume of opioids prescribed at hospital discharge decreased from 225 mg (interquartile range [IQR], 225, 300 mg) to 71.3 mg (IQR, 0, 112.5 mg; $P < 0.0001$). The incidence of OME prescriptions larger than the Minnesota recommended cap of 200 mg for postoperative pain control[14] decreased from 76.6% to 3.4% ($P < 0.0001$). The proportion of patients discharged without an opioid prescription significantly increased (from 4.2% to 36.6%; $P < 0.0001$). Following recommendation implementation, the rate of opioid refills increased (2.1% vs 6.0%; $P = 0.02$). The amount of opioids prescribed when a refill was needed was significantly lower following recommendation implementation (median, 75 mg [IQR, 75, 112.5 mg] vs 150 mg [IQR, 112.5, 200 mg]; $P = 0.007$) Table 2.

TABLE 2. Opioid Stewardship Comparing Pre– Versus Post–Recommendation Implementation (Across All Prolapse Surgical Procedures)

	Any Prolapse Surgery		
Variable	Before Nov 2015–Nov 2017 (n = 239)	After Dec 2017–Dec 2019 (n = 382)	*P*
No discharge opioid Rx	10 (4.2%)	140 (36.6%)	<0.0001
Median oral morphine equivalent (OME), mg, IQR	225 (225, 300)	71.3 (0, 112.5)	<0.0001
OME >200 mg	183 (76.6%)	13 (3.4%)	<0.0001
Opioid refill rate	5 (2.1%)	23 (6.0%)	0.02

IQR, interquartile range; OME, oral morphine equivalent; Rx, prescription.

TABLE 3. Pre– Versus Post–Recommendation Implementation, Stratified by Type of Surgical Procedure

	Vaginal Approach			Robotic Approach			Open Abdominal Approach		
Variable	Before (n = 117)	After (n = 204)	*P*	Before (n = 71)	After (n = 76)	*P*	Before (n = 47)	After (n = 86)	Before (n = 47)
No discharge opioid Rx	4 (3.4%)	66 (32.4%)	<0.0001	4 (5.6%)	35 (46.1%)	<0.0001	2 (4.3%)	31 (36%)	<0.0001
Median oral morphine equivalents (OME), mg, IQR	225 (225, 300)	75 (0, 112.5)	<0.0001	225 (187.5, 300)	31.3 (0, 92.5)	<0.001	225 (225, 337.5)	75 (0, 112.5)	<0.0001
OME >200 mg	95 (81.2%)	6 (2.9%)	<0.0001	50 (70.4%)	4 (5.3%)	<0.0001	36 (76.6%)	3 (3.5%)	<0.0001
Opioid refill rate	2 (1.7%)	11 (5.4%)	0.11	2 (2.8%)	4 (5.3%)	0.45	1 (2.1%)	8 (9.3%)	0.12

IQR, interquartile range; OME, oral morphine equivalent; Rx, prescription.

We next assessed the impact of the prescribing recommendation within subgroups of the prolapse cohort, stratified by surgical approach (transvaginal, robotic sacrocolpopexy, or open abdominal sacrocolpopexy) Table 3. As shown, in all 3 cohorts, there were significant decreases in the median OME prescribed ($P < 0.0001$) and the number of patients discharged with a quantity exceeding the recommended 200 mg OME limit ($P < 0.0001$). Likewise, there was a significant increase in the proportion of patients discharged without an opioid prescription ($P < 0.0001$). Although the rate of opioid prescription refills increased within each subgroup, these did not reach statistical significance (vaginal, $P = 0.11$; robotic, $P = 0.45$; abdominal, $P = 0.12$)

A scatterplot comparing opioid prescribing before and after recommendation implementation is presented in Figure 1. As shown, there was a marked and immediate decrease in mean OME prescribed at the time of recommendation implementation (time = 0). This effect was sustained over the following 2 years. Following implementation, the prescribed volume continued to trend downward, below the recommended prescribing level from our tiered system. The slopes of the 2 lines represent the predicted change in mean OMEs prescribed over time. Although both slopes are negative, representing decreasing opioids prescribed over time, there was no significant difference in the slope of the lines before and after recommendation implementation ($P = 0.53$). Rather, there was an immediate and

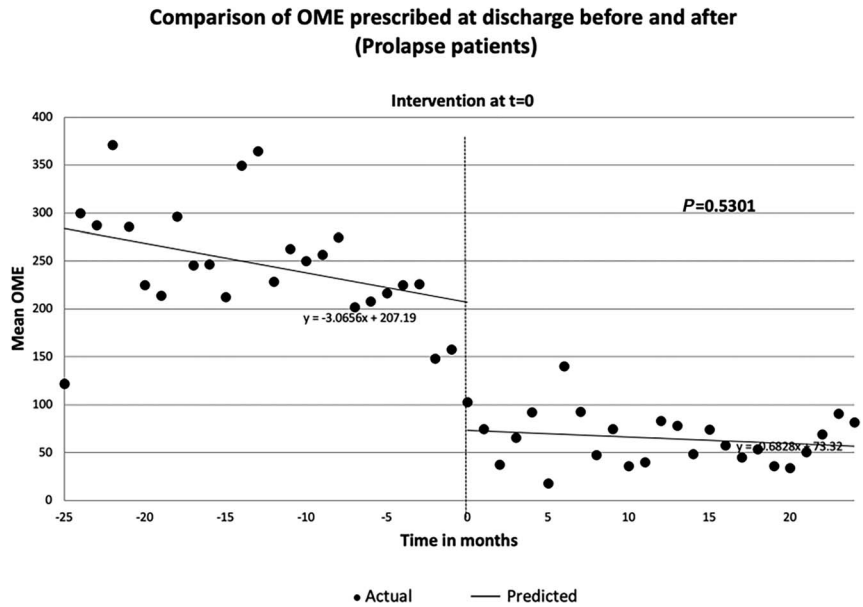

FIGURE 1. Comparison of oral morphine equivalents (OMEs) prescribed at discharge before and after guideline implementation.

sustained decrease after the recommendation implementation, which remained relatively constant.

An additional analysis was performed for patients undergoing isolated anti-incontinence surgery (without prolapse repair). Here, a similar pattern in opioid prescribing following implementation of the prescribing recommendation was identified. That is, the median OME prescribed decreased following implementation of the prolapse postoperative prescribing recommendation (median, 150 mg [IQR, 112.5, 225 mg] vs 75 mg [IQR, 0, 75 mg]; $P < 0.0001$) and the percentage of patients with more than 200 mg decreased (39.6% vs 3%; $P < 0.0001$). The number of patients discharged without an opioid prescription increased from baseline (4% vs 27.6%; $P < 0.0001$). There was no significant change in the rate of refills before (9.9%) versus after (4.5%) implementation ($P = 0.1$).

DISCUSSION

We found in this study of a large cohort of patients undergoing prolapse surgery that implementation of an evidence-based opioid prescribing recommendation led to a significant and sustained decrease in postoperative opioid prescribing. Within each type of prolapse surgery (vaginal, robotic, and open), the rate of patients discharged without an opioid prescription increased, and the proportion of patients prescribed quantities more than the state-recommended cap (200 mg OME) decreased to less than 5%. These results were sustained with 2 years of postimplementation follow-up. In addition, there was a spillover effect, with decreased opioid prescribing in isolated anti-incontinence procedures and overall when a refill prescription was needed, although the prescribing recommendation was implemented only for prolapse surgery and did not specify an amount for when prescribing a refill.

Recently, multiple studies have reported postoperative opioid prescribing following prolapse surgery in excess of patient needs.[4,15–17] Coupled with this are efforts to improve multimodal pain management strategies and decrease reliance on opioids for postoperative pain following prolapse surgery. In recognition of this, the American Urogynecologic Society recently published a clinical guidance document related to opioid prescribing following prolapse surgery.[7] Here, a proposed upper limit of 112.5 mg OME is recommended for index patients undergoing prolapse surgery. It is noted that patients with lower requirements, such as those without in-hospital use, could be discharged without an opioid prescription.[7] One limitation of the current literature for prolapse surgery is a lack of long-term data evaluating the impact of these changes on prescribing practices. Thus, our study augments the available literature, demonstrating sustainable decreases in prescribing when implementing evidence-based changes. Similar consistent improvements in opioid prescribing have been reported in other urologic procedures.[18]

We also identified an unintended benefit of the prolapse surgery recommendations: a spillover effect to other pelvic floor surgical procedures. While the recommendations were specific to prolapse surgery and did not comment on isolated anti-incontinence surgery, there was a significant decrease in opioid prescribing following these procedures as well. This is likely from increased health care professional education on the topic, improved patient counseling on opioid use, and comfort with more restrictive prescribing from the experience garnered with the prolapse cohort. A spillover effect has been reported within the general surgery literature following an evidence-based practice change in opioid prescribing after laparoscopic cholecystectomy.[19,20] Following the intervention, there were also significant decreases in opioid prescribing after laparoscopic appendectomy, laparoscopic inguinal hernia repair, laparoscopic gastrectomy, and thyroidectomy/parathyroidectomy.[19] Thus, the impact of initial targeted efforts to improve opioid prescribing after a specific procedure may be magnified as they influence prescribing patterns following other surgical procedures.

Although our initial intervention significantly decreased opioid prescribing from baseline levels, there remains room for further advances in opioid stewardship. For instance, following recommendation implementation, the volumes prescribed at our institution continue to trend downward as we work to utilize additional measures to improve patient counseling/expectations, perioperative pain management, and Enhanced Recovery After Surgery pathways.[21] During the postimplementation period, we saw the mean OMEs prescribed decrease below our tier 1 recommendation of 112.5 mg OME to 71.3 mg OME, which highlights the potential to further decrease opioid prescribing. Working to minimize opioid use, or even facilitate an opioid-free recovery, remains a steadfast goal of the interventions. The feasibility of this was highlighted in a recent randomized trial with use of ice packs, acetaminophen, and ketorolac leading to an opioid-free recovery following prolapse surgery in the intervention arm.[22] As such, with continued multidisciplinary and

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Opioid medication overuse and misuse have been classified as a national emergency in the United States. Opioids are connected with negative events such as addiction and death. Many surgeons are working to reduce opioid prescribing while still maintaining adequate pain control in patients who have undergone surgery. Our group created a 3-level recommendation system for opioid prescribing in patients who had surgery for vaginal and pelvic organ prolapse. The prescriptions were based on the amount of opioids used in hospital. Our current study seeks to evaluate long-term trends in opioid prescriptions before and after this recommendation system was implemented. Our results showed a significant decrease in opioids prescribed once our recommendation system went into effect. This decrease also remained consistent over time. However, there was a small increase in the number of refills. The amount of opioids prescribed during a refill was also lower than before the start of the prescribing guidelines. Arguably, this does not have a clinical impact in the era of electronic prescribing, which allows the patients to receive prompt pain management. In summary, our 3-level recommendation system for opioid prescribing was associated with a sustained decreased in opioid prescriptions after surgery for pelvic organ prolapse, with only a small increase in opioid refills. This highlights the ongoing impact of evidence-based opioid prescribing recommendations.

multimodal efforts, further reductions in opioid prescribing may be achieved.

Concerns about medication refill rates and patient satisfaction are 2 reported barriers related to restrictive postoperative opioid prescribing. It is worth noting that the recommendations we implemented were based on patients' in hospital opioid use, thus allowing for individualized prescribing. Following recommendation implementation, there was a significant increase in medication refills (from 2.1% to 6%). However, with the availability of electronic opioid prescribing, the barriers to obtaining this medication have decreased. Indeed, in our short-term assessment, there was an even greater increase in medication refills (from 3% to 18%), but there was no adverse impact on patient satisfaction.[5] This highlights the importance of counseling on pain management and shared decision-making related to opioid prescribing.[23]

We recognize that this study is limited by its retrospective and nonrandomized design. As such, differences in clinical and demographic factors may exist between the cohorts that were not assessed. In addition, although we observed sustained decreases in opioid prescribing overall, we were not able to evaluate recommendation adherence on an individual level. Thus, there may be variations in prescribing patterns (larger or smaller quantities) from the recommended levels that are not accounted for. Opioid refills obtained outside our hospital system were unable to be assessed or included. However, at our institution, patients typically follow up 6 weeks after prolapse surgery and are routinely in touch with their surgical care teams in the interim. Thus, most issues with postoperative pain control or need for medication refills are likely to be captured in the current study. Furthermore, belladonna and opium use was not calculated in the OMEs as these were typically utilized during hospital admission and would significantly skew OME calculations (30 or 60 mg OME per dose). Lastly, given the retrospective design, patient satisfaction scores were not able to be assessed, although this had been assessed in our prior prospective study.

CONCLUSIONS

With 2 years of postimplementation follow-up, the use of prolapse-specific, tiered postoperative opioid prescribing recommendations at our institution was associated with significant and sustained reductions in opioids prescribed. Although opioid refill rates did increase, these were overall uncommon and within the realm of normal clinical practice. This study further supports the use of procedure-specific evidence-based recommendations for opioid prescribing.

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REFERENCES

1. Compton WM, Jones CM, Baldwin GT. Relationship between nonmedical prescription-opioid use and heroin use. *N Engl J Med*. 2016;374:154–163. doi:10.1056/NEJMra1508490.

2. Brummett CM, Waljee JF, Goesling J, et al. New persistent opioid use after minor and major surgical procedures in US adults. *JAMA Surg*. 2017;152:e170504. doi:10.1001/jamasurg.2017.0504.
3. Centers for Disease Control and Prevention. Vital signs: overdoses of prescription opioid pain relievers and other drugs among women–United States, 1999–2010. *MMWR Morb Mortal Wkly Rep*. 2013;62:537–542.
4. Moskowitz D, Amin K, Lucioni A, et al. Opioid prescription and use in sacral neuromodulation, mid urethral sling and pelvic organ prolapse surgery: an educational intervention to avoid over prescribing. *J Urol*. 2019;201:979–986. doi:10.1097/JU.0000000000000028.
5. Linder BJ, Occhino JA, Wiest SR, et al. Assessing the impact of procedure-specific opioid prescribing recommendations on opioid stewardship following pelvic organ prolapse surgery. *Am J Obstet Gynecol*. 2019;221:515 e511–515 e518. doi:10.1016/j.ajog.2019.06.023.
6. Hill MV, McMahon ML, Stucke RS, et al. Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures. *Ann Surg*. 2017;265:709–714. doi:10.1097/SLA.0000000000001993.
7. Reagan KML, Boyles SH, Brueseke TJ, et al. Postoperative opioid prescribing after female pelvic medicine and reconstructive surgery. *Female Pelvic Med Reconstr Surg*. 2021;27:643–653. doi:10.1097/SPV.0000000000001113.
8. Hill MV, Stucke RS, McMahon ML, et al. An educational intervention decreases opioid prescribing after general surgical operations. *Ann Surg*. 2018;267:468–472. doi:10.1097/SLA.0000000000002198.
9. Kalogera E, Bakkum-Gamez JN, Jankowski CJ, et al. Enhanced recovery in gynecologic surgery. *Obstet Gynecol*. 2013;122:319–328. doi:10.1097/AOG.0b013e31829aa780.
10. Raju R, Occhino JA, Linder BJ. LeFort partial colpocleisis: tips and technique. *Int Urogynecol J*. 2020;31:1697–1699. doi:10.1007/s00192-019-04194-3.
11. Linder BJ, Gebhart JB, Occhino JA. Total colpocleisis: technical considerations. *Int Urogynecol J*. 2016;27:1767–1769. doi:10.1007/s00192-016-3034-4.
12. Linder BJ, Anand M, Klingele CJ, et al. Outcomes of robotic sacrocolpopexy using only absorbable suture for mesh fixation. *Female Pelvic Med Reconstr Surg*. 2017;23:13–16. doi:10.1097/SPV.0000000000000326.
13. Anand M, Weaver AL, Fruth KM, et al. Symptom relief and retreatment after vaginal, open, or robotic surgery for apical vaginal prolapse. *Female Pelvic Med Reconstr Surg*. 2017;23:297–309. doi:10.1097/SPV.0000000000000389.
14. Minnesota Department of Human Services. Opioid Prescribing Work Group. Sentinel opioid prescribing measure. Available at: https://mn.gov/dhs/opip/opioid-guidelines/pain-phase/acute-pain.jsp. Accessed May 18, 2023.
15. Swenson CW, Kelley AS, Fenner DE, et al. Outpatient narcotic use after minimally invasive urogynecologic surgery. *Female Pelvic Med Reconstr Surg*. 2016;22:377–381. doi:10.1097/SPV.0000000000000299.
16. Reagan KML, O'Sullivan DM, Gannon R, et al. Decreasing postoperative narcotics in reconstructive pelvic surgery: a randomized controlled trial. *Am J Obstet Gynecol*. 2017;217:325 e321–325 e310. doi:10.1016/j.ajog.2017.05.041.
17. Ramaseshan AS, O'Sullivan DM, Steinberg AC, et al. A comprehensive model for pain management in patients undergoing pelvic reconstructive surgery: a prospective clinical practice study. *Am J Obstet Gynecol*. 2020;223:262 e261–262 e268. doi:10.1016/j.ajog.2020.05.019.
18. Findlay BL, Britton CJ, Glasgow AE, et al. Long-term success with diminished opioid prescribing after implementation of standardized postoperative opioid prescribing guidelines: an interrupted time series analysis. *Mayo Clin Proc*. 2021;96:1135–1146. doi:10.1016/j.mayocp.2020.10.045.
19. Howard R, Alameddine M, Klueh M, et al. Spillover effect of evidence-based postoperative opioid prescribing. *J Am Coll Surg*. 2018;227:374–381. doi:10.1016/j.jamcollsurg.2018.06.007.
20. Howard R, Waljee J, Brummett C, et al. Reduction in opioid prescribing through evidence-based prescribing guidelines. *JAMA Surg*. 2018;153:285–287. doi:10.1001/jamasurg.2017.4436.
21. Madsen AM, Martin JM, Linder BJ, et al. Perioperative opioid management for minimally invasive hysterectomy. *Best Pract Res Clin Obstet Gynaecol*. 2022;85(Pt B):68–80. doi:10.1016/j.bpobgyn.2022.05.006.
22. Petrikovets A, Sheyn D, Sun HH, et al. Multimodal opioid-sparing postoperative pain regimen compared with the standard postoperative pain regimen in vaginal pelvic reconstructive surgery: a multicenter randomized controlled trial. *Am J Obstet Gynecol*. 2019;221:511 e511–511 e510. doi:10.1016/j.ajog.2019.06.002.
23. Prabhu M, McQuaid-Hanson E, Hopp S, et al. A shared decision-making intervention to guide opioid prescribing after cesarean delivery. *Obstet Gynecol*. 2017;130:42–46. doi:10.1097/AOG.0000000000002094.