

## Abstract

**Background:** Opioids are commonly prescribed to women for pain control following Cesarean section. Given that Cesarean section is the most common surgical procedure in the United States, reducing opioid use to meet individualized requirements in this patient population can have a significant impact on decreasing unnecessary opioid prescriptions and encouraging non-opioid and non-pharmacologic forms of analgesia. Here, we hypothesized that basing post-discharge analgesic prescriptions on pre-discharge use recorded in the electronic medical record would reduce the amount of opioid medications prescribed while maintaining adequate post-operative pain control.

**Methods:** This randomized controlled trial was conducted in 55 female inpatients who underwent Cesarean section. Following IRB approval and after obtaining patient written informed consent, eligible patients with a 24-hour before-discharge opioid intake of 22.5 milligram morphine equivalents (MME) - the equivalent of 3 oxycodone 5 milligram tablets - or less were randomized into two groups. In the control group, at the time of writing the discharge prescription for a patient the provider received a control best practice alert (BPA) to consider prescribing the usual medications for pain management after discharge. In the intervention group, the provider was informed by the BPA prescription tool that a patient may be considered for a lower post-discharge opioid dose (no opioids for patients who did not take any opioids in the last 24 hours, and 10 oxycodone 5mg tablets [75 MME], for patients having taken less than 22.5 MME). Final medication choices and dosing decisions remained at the discretion of the treating provider. Surveys were administered to patients for each of the four weeks following discharge. Independent-Samples Mann-Whitney U Test was used to analyze total discharge MME after confirming a non-normal distribution of the primary outcome within groups (visual assessment and testing via Kolmogorov-Smirnov  $p < 0.001$ ).

**Results:** There was no difference in the amount of opioids prescribed on discharge between the intervention group compared to the control group (62.8 vs 55.3 MMEs,  $p = 0.65$ ). The majority of patients took non-steroidal anti-inflammatory drugs (NSAIDs) (92.5% vs 100%) and 100% of patients took acetaminophen pre-discharge. In the four weeks following discharge, patients continued to take NSAIDs (77.8% to 21.4%), acetaminophen (82.2% to 21.4%), and a lower amount of opioids (11.9 vs 15.0 MMEs,  $p = 0.807$ ) than what they were prescribed on discharge. By week 4, 50% of patients reported having left over opioid pills.

**Conclusions:** Shortly after design and approval of this study, our labor and delivery ward instituted a protocol based on current recommendations for appropriate opioid prescribing on discharge and the use of multimodal analgesia including NSAIDs and acetaminophen. The impact of this quality improvement project is reflected by our findings. Yet, even at the current, more conservative level of opioid prescribing, a large proportion of leftover opioids were reported. Further studies are needed to determine the optimal approach for interventions that can decrease unnecessary opioid prescriptions while maintaining effective pain control.