

## *The Opioid Epidemic in the United States: A Call for Practice Change in Pediatric Outpatient Surgeries*

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### ABSTRACT

While narcotic analgesics are effective in treating post-surgical pain, these commonly prescribed medications have been shown to carry significant risks of inappropriate use, chronic dependence, and overdose leading to death. The epidemic of opioid use in the USA is multifactorial and in part, is the product of excessive prescribing by surgeons treating postoperative pain.<sup>1,2</sup> In recent years, there has been great emphasis on limiting postoperative narcotic prescribing in adult patients. More recently, this has extended to limiting narcotic use in pediatric patients as well due to rising concerns of persistent use after surgery and serious adverse events in this population including death.<sup>3</sup>

### KEYWORDS

Narcotic, Pediatric, Surgeries, Opioid Epidemic, Pediatric Urology

While narcotic analgesics are effective in treating post-surgical pain, these commonly prescribed medications have been shown to carry significant risks of inappropriate use, chronic dependence, and overdose leading to death. The epidemic of opioid use in the USA is multifactorial and in part, is the product of excessive prescribing by surgeons treating postoperative pain.<sup>1,2</sup> In recent years, there has been great emphasis on limiting postoperative narcotic prescribing in adult patients. More recently, this has extended to limiting narcotic use in pediatric patients as well due to rising concerns of persistent use after surgery and serious adverse events in this population including death.<sup>3</sup> CDC data demonstrated that pediatric opioid-related deaths in the US have increased by 268% from 1999 to 2016. Approximately 9,000 children and adolescents died in this seventeen year timeframe from opioids. Of these deaths, 73% were due to prescription opioids, and 7% were in children ages 0-4 years old.<sup>4</sup> Commonly implicated medications have included hydrocodone, oxycodone, morphine, tramadol, codeine and buprenorphine. The FDA released more restrictive warnings in 2017 regarding codeine and tramadol in pediatric patients. Codeine is contraindicated in children under twelve years old and tramadol in children under seventeen

years old, due to multiple cases of over-sedation, apnea and death.<sup>5</sup>

Historically post-surgical pain in the pediatric population was generally undertreated. This is largely due to early misconceptions about pediatric pain sensation capabilities. Additionally, infant and young children's inability to verbalize or convey pain presence and severity have led to undertreatment.<sup>6</sup>

Currently, there is concern that narcotic pain medication is overprescribed in the pediatric population. This concern is supported by the adverse effects and events associated with their use. In one study by Chung et al, 15% of their pediatric population cohort over one year were prescribed and filled one or more opioid prescriptions.<sup>7</sup> Notably, of these 1.3 million opioid prescriptions, over 50% were for outpatient medical and dental procedures. They found that 1 of every 2611 opioid prescriptions resulted in an opioid related ED visit (excluding GI or skin effects), hospitalization, or death. The vast majority of these adverse events, 89%, were from narcotics directly prescribed to the child, and in 71%, the narcotic medication was taken in a manner consistent with how the medication was originally

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prescribed.<sup>7</sup>

The adverse effects in the adult population have been well established and include sedation, respiratory depression, dizziness, ileus, constipation, opioid induced hyperalgesia/pain sensitivity, immunosuppression, and hormonal dysfunction.<sup>8,9</sup> Evidence regarding adverse effects specific to opioid use in the pediatric population is more limited, in part because research involving pediatric patients and opioids is limited by ethical issues involved in enrolling pediatric patients for clinical trials. Major adverse effects of opioids well known to the pediatric population include dizziness, sedation, dose-related respiratory and CNS depression leading to apnea and death, constipation, and nausea and vomiting.<sup>7,10</sup> Accidental ingestion is also an important risk especially for children under six years old. From 2010-2013, 13.8% of the total ED visits for unsupervised medication exposures in the US were due to oral narcotic ingestions.<sup>11</sup> Additional risks in prescribing these medications to pediatric patients include inappropriate use by family members or others in the home and physical dependence and addiction. Increased availability of these narcotics in the home and community has been shown to contribute to overdoses in all age groups.<sup>12</sup>

Interestingly, comparisons between pain control using narcotic and non-narcotic medications postoperatively have demonstrated similar efficacy in treating pain in adults as evidenced by similar reported pain scores.<sup>9</sup> Given the lower risks associated with non-narcotic pain medication use and the similar efficacy of non-narcotics in pain control, the use of narcotics in the pediatric population should be limited. Narcotics should be considered a second line treatment and avoided, if possible, especially for outpatient surgeries.

At WVU Medicine Children's, we implemented a new strategy since May 2019 of treating postoperative pain without use of any narcotics in pediatric urology patients undergoing outpatient same day surgery that includes open and laparoscopic/robotic procedures. Our protocol for perioperative pain management starts during the surgery with adequate local anesthesia for the incisional site with bupivacaine (Marcaine) 0.25% or caudal anesthesia.

This is followed by post-operative scheduled Tylenol and Motrin, alternating for the next twenty four hours, and then as needed.

We reviewed our data for all outpatient procedures from May 1, 2019 until March 1, 2020. Of the 330 cases treated without narcotics, we have observed no emergency department visits and have received only two parental complaints of poorly managed pain. One of those two parents stated that her son's pain after penile surgery was inadequately managed with non-narcotic medication, but she preferred not to give him a narcotic one.

Overall, our experience at WVU suggests that it is feasible to eliminate postoperative narcotic use in children undergoing outpatient surgery. This can be done without compromising pain control or patient-family satisfaction. Increased community awareness of risks associated with opioids is growing and will likely influence the preference of postoperative analgesia toward no narcotics. A large-scale implementation of this practice would assist in decreasing the morbidity and mortality associated with the current US opioid epidemic.

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