Post-operative prescription of pain medication

BY BRADLEY KUZEL, MD, AND ZACHARY EDGERTON

How much pain medication should we prescribe after surgery? What type of pain medications should we use? Most orthopedic surgeons likely make these decisions based on their training, past experience, institutional expectations, geographic considerations and patient-specific variables.

Orthopedic procedures pose both challenge and opportunity. They are known to cause significant pain due to the manipulation of musculoskeletal tissue and there are many types or procedures performed. We all would agree that a carpal tunnel release is a minor procedure and that patients with open tibial shaft fractures from a motor vehicle accident will likely experience severe pain. But what about ankle fusion, anterior cruciate ligament reconstruction, rotator cuff repair or an anterior total hip arthroplasty?

An audience survey performed at the 2014 American Academy of Orthopaedic Surgeons revealed that most orthopedic surgeons do not know how many opioid pills to prescribe for a given procedure or how many pills their patients actually take (Stanton). This has led to inconsistent and often excessive opioid prescriptions. According to the American Society of Consultant Pharmacists, millions of pounds of unused prescriptions are left in patient medicine cabinets (Shrank). This has led to inconsistent and often excessive opioid prescriptions. According to the American Society of Consultant Pharmacists, millions of pounds of unused prescriptions are left in patient medicine cabinets (Shrank). This, unfortunately, has contributed to the current opioid and heroin epidemic that we face as a state and nation. The United States Centers for Disease Control (CDC) reported 20,101 deaths in the United States related to pain medication overdose and 12,990 related to heroin overdose (Rudd). In Minnesota, a Star Tribune analysis of death certificates found the number of opioid-related deaths to be even higher.

### Table X

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>NUMBER RESPONDING</th>
<th>AVERAGE NO. PRESCRIBED</th>
<th>HIGHEST NO. PRESCRIBED</th>
<th>LOWEST NO. PRESCRIBED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpal tunnel release</td>
<td>45</td>
<td>24</td>
<td>90</td>
<td>15</td>
</tr>
<tr>
<td>ORIF distal radius fracture</td>
<td>52</td>
<td>51</td>
<td>120</td>
<td>30</td>
</tr>
<tr>
<td>Shoulder arthroscopy</td>
<td>40</td>
<td>70</td>
<td>135</td>
<td>30</td>
</tr>
</tbody>
</table>

### Table X

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>NUMBER RESPONDING</th>
<th>AVERAGE NO. TABLETS$^2$</th>
<th>HIGHEST NO. TABLETS</th>
<th>LOWEST NO. TABLETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee arthroscopy</td>
<td>45</td>
<td>43</td>
<td>135</td>
<td>9</td>
</tr>
<tr>
<td>Total knee arthroplasty</td>
<td>50</td>
<td>102</td>
<td>400</td>
<td>20</td>
</tr>
<tr>
<td>Total hip arthroplasty</td>
<td>50</td>
<td>67</td>
<td>270</td>
<td>30</td>
</tr>
<tr>
<td>Hip hemiarthroplasty</td>
<td>51</td>
<td>67</td>
<td>270</td>
<td>30</td>
</tr>
<tr>
<td>Hip intramedullary nail fixation</td>
<td>46</td>
<td>71</td>
<td>180</td>
<td>30</td>
</tr>
<tr>
<td>ORIF ankle</td>
<td>57</td>
<td>65</td>
<td>180</td>
<td>30</td>
</tr>
</tbody>
</table>

### Table X

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>NUMBER RESPONDING</th>
<th>AVERAGE NO. TABLETS$^3$</th>
<th>HIGHEST NO. TABLETS</th>
<th>LOWEST NO. TABLETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laminectomy</td>
<td>19</td>
<td>72</td>
<td>120</td>
<td>20</td>
</tr>
<tr>
<td>Lumbar spine fusion</td>
<td>18</td>
<td>101</td>
<td>180</td>
<td>50</td>
</tr>
</tbody>
</table>

NOTE: Mean, median and mode numbers have been converted from MME to 5 mg hydrocone for the purpose of these tables.
related deaths up in 2016 (402) compared to 2015 (344) (Olson).

The American Academy of Orthopaedic Surgeons (AAOS) and the Minnesota Orthopaedic Society (MOS) have worked aggressively to engage and educate surgeons to promote further awareness and understanding of this problem. The AAOS published an information statement in 2015 about “Opioid use, misuse, and abuse in orthopaedic practice.” This, with a number of other online tools and educational tools at the annual meeting, has improved surgeon awareness. At the 2017 MOS annual meeting, an entire session was devoted to this issue with physicians from multiple specialties. Our awareness is improving. Yet, we still need more information to provide meaningful recommendations.

Method
In an attempt to understand current prescription practices, the Minnesota Orthopaedic Society sent a survey to 475 board-certified orthopedic surgeons in Minnesota, asking them to calculate the total number of morphine milligram equivalents (MME) they prescribe in their first prescription for the 20 most common orthopedic surgeries, understanding that some of the larger surgeries can require more than one prescription. For example: a provider who typically prescribes 10 5-mg hydrocodone tablets for carpal tunnel release reported “50 MME.” The survey was conducted via surveymonkey.com. Morphine-equivalent unit conversions were provided, along with examples of how to calculate the correct MME for various opioids and tramadol. In all, 97 surgeons participated in the survey—a 21 percent response rate. They were asked to respond only for surgeries they commonly perform.

Discussion
The results of our survey provide an interesting glimpse into the post-surgical opioid prescription practices in our region. These values gain more significance when reviewed in the context of the available literature.

Rogers et al evaluated opioid consumption after common upper-extremity surgeries. They studied 250 patients and prescribed 30 hydrocodone or oxycodone tablets. The average prescription of 24 hydrocodone tablets for carpal tunnel release to distal radius fixation. The average consumption was 10 pills, and 92 percent of their patients reported that their pain control was adequate. Medicare patients in the study consumed an average of seven pills. Half of the patients took pills for fewer than two days and the total number of leftover pills for the group was calculated to be 4,639 (Rogers).

Another study looking only at carpal tunnel release noted that 159 patients who were prescribed opioid pills took an average of 4.9 pills for 2.3 days. Some 110 patients prescribed tramadol took 3.3 pills for 1.8 days on average (Miller).

Another study by Kim, et al, published in the Journal of Bone and Joint Surgery in 2016, looked at opioid utilization for 1,416 patients after upper-extremity surgery and found the average prescription was 24 tablets. The average number taken was eight tablets—five for those who had had soft tissue procedures and 13 for those with fractures. They quoted a 34 percent utilization rate (Kim).

With the above studies in mind, our average prescription of 24 hydrocodone tablets for carpal tunnel release is similar to what is done in other areas of the country, yet the literature provides us with a powerful tool to help shape our practices. For instance, one could reasonably recommend not prescribing more than five to 10 opioid tablets—or even utilizing non-steroidal anti-inflammatories and Tylenol alone—for carpal tunnel release and other minor upper-extremity soft-tissue procedures. These studies also allow us to communicate with patients in an educated and consistent manner. This communication and expectation management prior to surgery can help guide patient consumption and prevent problems in the post-surgical period (Morris).

Future considerations
As more evidence becomes available, we will be able to make procedure-specific recommendations to help guide surgeons in their post-surgical prescription practices. The studies discussed here provide insight into upper-extremity surgery. Studies related to more invasive surgeries with longer surgical time and larger blood loss (i.e. the correction of a spinal deformity) will help us better understand appropriate prescription practices for procedures expected to cause severe pain. Current global recommendations include:

- Avoid prescribing opioid pain medications for patients with pain related to chronic musculoskeletal problems before surgery.
- Avoid using long-acting opioids such as MS Contin or OxyContin.
- Before surgery, set realistic expectations with patients for the amount and duration of opioid use.
- Work as an empathetic guide for patients through the surgical period. Managing psychological distress and optimizing coping strategies may be more effective than opioids in reducing post-operative pain perception (Ring).
- Educate your staff in clinic as well as the inpatient and outpatient wards about how to appropriately and safely treat pain. The message should no longer be, “You need to stay ahead of your pain,” but rather, “Work to keep your pain manageable…”
- Fully utilize adjunct management tools such as ice, elevation, splinting, perioperative intravenous and oral non-opioid medications, over-the-counter medications and perioperative nerve blocks.
• Identify at-risk patients prior to surgery and develop a clear plan with them and their primary doctor for pain-management after surgery. At-risk patients include those between the ages of 16 and 45; those with a personal or family history of alcohol-, prescription- or illegal drug-abuse; patients with psychiatric diagnoses such as schizophrenia, bipolar disorder, obsessive-compulsive disorder, attention-deficit-hyperactivity disorder, depression, anxiety disorder, and post-traumatic stress disorder; and patients with a history of pre-adolescent sexual abuse (Morris).

• Use the state’s prescription drug-monitoring program when appropriate.

• Work within your medical organization to establish guidelines for appropriate prescription after common surgeries. As more guidance becomes available, we can make a positive difference in our patients lives and in our communities with sound post-surgical prescription practices.

The limitations of our study include sample size and possible under- or over-reporting by physicians responding. Another variable that was not evaluated was the age of the physicians responding, which might have provided interesting information about generational differences in postsurgical opioid prescription. MM

Bradley Kuzel, MD, is president-elect of the Minnesota Orthopaedic Society and a member of the Institute for Clinical Systems Improvement work group that is developing guidelines for acute pain management after surgery. Zachary Edgerton is a graduate of Loyola University who will be entering medical school next year.

REFERENCES

AAOS Information Statement. Opioid Use, Misuse, and Abuse in Orthopaedic Practice.


