Prescribing Opioids for Postoperative Pain – Supplemental Guidance

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Developed by the Dr. Robert Bree Collaborative and Washington State Agency Medical Directors' Group in collaboration with academics, pain experts, and practicing surgeons

AMDG agency medical directors' group

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DR. ROBERT BREE COLLABORATIVE

Supplemental Guidance on Prescribing Opioids for Postoperative Pain

This supplement was developed by the Dr. Robert Bree Collaborative (Bree Collaborative) and the Washington Agency Medical Directors' Group (AMDG) in collaboration with an advisory group of the state's academic leaders, pain experts and surgeons in general care and specialty areas in response to the growing opioid crisis. The supplement aligns postoperative discharge opioid prescribing with best practice from the AMDG Interagency Guideline on Prescribing Opioids for Pain and the best practices of the AMDG/Bree Dental Guideline on Prescribing Opioids for Acute Pain Management. The included evidence represents a rapidly evolving literature on appropriate postoperative opioid prescribing. The recommendations in this supplement are based on the current best available clinical and scientific evidence from the literature and a consensus of expert opinion and are intended for use in addition to, rather than a replacement of, the guidelines for opioid prescribing for postoperative pain in the 2015 AMDG guidelines.

In addition to prescribing the appropriate amount of opioids for a given procedure, it is important that the surgeon provide education for the patient and caregivers about realistic expectations for postoperative pain management, functional recovery activities, and timely reduction in opioid use as well as providing instruction for safe storage and disposal of opioids as specified in the 2015 AMDG Guideline here. The surgeon should also follow the preoperative risk assessment and education as outlined in the 2015 AMDG Guidelines.

At Time of Discharge

Clinical Recommendations

Although opioids are often indicated to manage severe acute postoperative pain, recent studies show that patients often receive more opioids for home use than are necessary for pain related to many procedures. This may result in dangerous and illegal diversion of opioids to those for whom opioids were not prescribed. Increased duration of initial opioid prescription has also been associated with increased incidence of chronic opioid use and risk of opioid misuse and overdose. There is no optimal number of pills for a given procedure, but the following recommendations are intended to serve as a general framework for managing postoperative pain, while minimizing leftover pills. The durations and numbers in the table are based on the currently available evidence. The classifications in **Table 1** are constructed around the evidence to date and can serve as a guide for procedures with similar degrees of expected postoperative pain [1-7].

Prescribing opioids for postoperative pain should, in most cases, follow the guidance in Table 1. The rationale for any exceptions should be well documented in the record. Even in these exceptions, the initial prescription should not exceed two weeks.

Table 1. Evidence-Based Duration of Opioid Prescriptions on Discharge Following Surgery (based on data showing that these opioid prescription durations are adequate to treat postoperative pain in >75% of patients without refills)

Type I – Expected rapid recovery	
Dental procedures such as extractions or simple oral surgery (e.g., graft, implant).	• Prescribe a nonsteroidal anti-inflammatory drug (NSAID) or combination of NSAID and acetaminophen for mild to moderate pain as first-line therapy. • If opioids are necessary, prescribe ≤3 days (e.g., 8 to 12 pills) of short-acting opioids in combination with an NSAID or acetaminophen for severe pain. Prescribe the lowest effective dose strength. • For more specific guidance, see the Bree Collaborative Dental Guideline on Prescribing Opioids for Acute Pain Management.
Procedures such as laparoscopic appendectomy, inguinal hernia repair, carpal tunnel release, thyroidectomy, laparoscopic cholecystectomy, breast biopsy/lumpectomy, meniscectomy, lymph node biopsy, vaginal hysterectomy.	• Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy. • If opioids are necessary, prescribe ≤3 days (e.g., 8 to 12 pills) of short-acting opioids in combination with an NSAID or acetaminophen for severe pain. Prescribe the lowest effective dose strength.
Type II – Expected medium term recovery	
Procedures such as anterior cruciate ligament (ACL) repair, rotator cuff repair, discectomy, laminectomy, open or laparoscopic colectomy, open incisional hernia repair, open small bowel resection or enterolysis, wide local excision, laparoscopic hysterectomy, simple mastectomy, cesarean section.	• Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy. • Prescribe ≤7 days (e.g., up to 42 pills) of short-acting opioids for severe pain. Prescribe the lowest effective dose strength. • For those exceptional cases that warrant more than 7 days of opioid treatment, the surgeon should re-evaluate the patient before a third prescription and taper off opioids within 6 weeks after surgery.
Type III – Expected longer term recovery	
Procedures such as lumbar fusion, knee replacement, hip replacement, abdominal hysterectomy, axillary lymph node resection, modified radical mastectomy, ileostomy/colostomy creation or closure, thoracotomy.	• Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy. • Prescribe ≤14 days of short-acting opioids for severe pain. Prescribe the lowest effective dose strength. • For those exceptional cases that warrant more than 14 days of opioid treatment, the surgeon should re-evaluate the patient before refilling opioids and taper off opioids within 6 weeks after surgery.

Patients on Chronic Opioid Analgesic Therapy	
Elective surgery in patients on chronic opioid therapy	• Prescribe non-opioid analgesics (e.g., NSAIDs and/or acetaminophen) and non-pharmacologic therapies as first-line therapy. • Resume chronic opioid regimen if patients are expected to continue postoperatively. • Follow the recommendation above for prescribing the duration of short acting opioids following a particular surgery (e.g., 3, 7, or 14 days). An increased number of pills per day may be expected compared to an opioid naïve patient. Patients on chronic opioid therapy should have a similar tapering period as opioid naïve patients postoperatively. Prescribe the lowest effective dose strength. • For those exceptional cases that warrant more than 14 days of opioid treatment after hospital discharge, the surgeon should re-evaluate the patient before refilling opioids and taper off opioids within 6 weeks after surgery to no higher total daily dose than was present pre-operatively.

Although a prescription may be written for frequent dosing intervals such as "prn every four to six hours," avoid routine prescribing of the number of pills that equals the total allowable maximum dosing. For example; patients using two pills prn every four hours on hospital discharge postoperatively would be calculated to need as many as 84 pills in the next week. A patient should be expected to need less frequent dosing, however, as pain resolves and thus will likely need a significantly lower number of pills (as little as half) for a specific specified timeline (e.g., three, seven, or 14 days). In the above scenario, the patient could be prescribed 42 pills with instructions that the prescription should be taken as needed for severe pain and will probably last a week as healing continues. Consider discussing partial refills with your patient, more information here. While pain may persist for many weeks following some surgeries, patients who are unable to taper opioid use to coincide with expected healing or who report pain severe enough to warrant ongoing opioid use after the procedure-specific usual number of days require re-evaluation in an effort to understand the factors delaying a normal course of recovery. For patients who are still on opioids after six weeks, follow the recommendations in the subacute or chronic phase of the AMDG Interagency Guideline on Prescribing Opioids for Pain.

If opioids are continued, best practice for a health care provider is to assess and document the following to determine success of treatment:

(a) Change in pain level;
(b) Change in physical function;
(c) Change in psychosocial function;
(d) Change in medical condition; and
(e) Diagnostic evaluations to investigate causes of continued acute perioperative pain (e.g., infection, ischemia, lack of healing).

Evidence

Acute pain after surgery has, for many years, been shown to be treated inadequately [8]. Buvanendran et al. [9] found that 54% of postoperative patients had "moderate to extreme pain" at hospital discharge after inpatient surgery and 46% of patients still had "moderate to extreme pain" two weeks later. As in other areas of pain management however, the high prevalence of pain does not necessarily imply a shortage of opioids [10]. Indeed, Hill et al. [11] reported that patients take only 34% of the opioid pills prescribed for them after five different surgeries and numerous other studies have supported these findings that the number of opioid pills prescribed for many different surgeries is much more than is needed (e.g., five-16). This over-abundance of opioids prescribed after surgery is particularly concerning when viewed in the light of generally inadequate systems for opioid safe storage and disposal [12]. This sets the stage for drug diversion in the home, a common route for opioid misuse and overdose [13]. Postoperative opioid over-prescribing may also be unsafe for those who are prescribed the drugs. For example, Brummett and colleagues reported that, among patients who were opioid-free in the year leading up to surgery, opioid use beyond 90 days postoperatively occurred in approximately 6.0% of adults [14] and 4.8% of 13-21 year olds [15] following a variety of surgeries. Moreover, Shah et al. [16] found that the likelihood of persistent opioid intake one year after initial prescription increased by one percent per day for each day beyond day three of the first prescription. Long-term opioid use is not always intended and can be a result of patient, environmental and prescriber characteristics [17]. Nonetheless, Brat et al. [18], examining a nationwide insurance database of more than a million opioid-naïve surgical patients, identified the duration of initial prescription after surgery as a risk factor for later opioid misuse (dependence, abuse, or overdose) diagnoses. Although only 0.6% of postoperative patients subsequently had such diagnoses, each additional week of opioid therapy prescribed was associated with an adjusted 20% increase in hazard for opioid misuse, with a total 44% increase in hazard if a refill was also needed. Clearly, improving prescribing practices towards providing shorter durations of prescribed opioids should be an important goal of postoperative prescribing guidelines assuming they are equally effective in treating pain.

Fortunately, education of surgeons at both Dartmouth Medical Center [19] and University of Michigan Medicine [20] has had great success reducing opioid prescribing by as much as 50% without increasing postoperative pain, at least as indicated by the number of refill requests. Indeed, Scully et al. [21] have used the likelihood of refills as a marker for appropriate prescription duration after surgery. In a database of more than 200,000 postoperative patients, Scully et al. found that the likelihood of refills differed by length of initial prescription and that the lowest number of refills differed across types of surgeries. For example, general surgery cases had fewest refills if initial prescriptions were for nine-day prescriptions. In contrast, the refill nadir followed 13-day prescriptions for women's health procedures and this was extended to 15 days for musculoskeletal procedures. Scully et al. concluded that opioid prescriptions should be no longer than these durations although they were not able to conclude with certainty how much shorter optimum prescription durations might be for each surgery type [21]. Thiels [22] has also reported considerable differences in refill likelihood between surgical procedures.

Recently, University of Michigan researchers using a large database from the primary commercial health insurance company in the state have taken a surgery-specific approach to appropriate lengths of

postoperative opioid prescriptions. Although their data has been shared primarily on-line thus far [23], their recommendations, available here, for the number of pills to be prescribed after a particular surgery is based on evidence of how many pills were sufficient for 75% of the patients. Not all surgeries have yet been examined and, in this fast moving field, recommendations are likely to change even for surgeries that have already been examined. Use of opioids has been found to be impacted by patient education [20, 24]. Many factors go into patients' use of and discontinuation of opioid medications after surgery. Gupta et al [25] found that two weeks after foot and ankle surgery, two-thirds of patients had stopped taking opioids. However, more than 70% still had pain. The most common reason for stopping opioids was that patients had switched to other pain medications. Thus another emphasis in postoperative pain prescribing guidelines should be the utilization of non-opioid pharmacological therapies as well as non-pharmacological therapies for postoperative pain and patient education that severe pain, rather than pain itself, should be the indication for continued opioid use.

Extrapolating from existing surgery-specific data as yet unstudied procedures, in order to guide prescribing of opioid pill numbers or durations (e.g., three, seven, or 14 day durations), is not yet possible. Kim et al [26] saw large variations in mean numbers of opioid pills used by patients after upper extremity surgeries, even following surgeries on the same area (e.g., hand, wrist, elbow or shoulder) or on similar tissue types (e.g., soft tissue, bone, joint). Since the goal of pain management in the postoperative setting is always to facilitate recovery and improve function, we have grouped surgeries in this Guideline supplement by different durations of recovery. This should help guide the prescriber towards appropriate opioid treatment of postoperative pain following surgeries where surgery-specific data is not yet available. Although, the number of pills to be prescribed is probably the easiest benchmark to be included in a guideline for prescribing, dispensing, or consuming medications, it is important to remember that it is prescription duration that has been most associated with long-term use and misuse of opioids. Indeed, Brat et al. [18] noted that dosage was not correlated with increased risk of opioid misuse diagnoses, except with longer prescription durations. High inpatient opioid dose requirements have been found to be most predictive of high outpatient opioid requirements [27, 28] but not necessarily longer duration of use. Thus, even patients who come to surgery on chronic opioid analgesic therapy, and thus likely having opioid tolerance, may not require longer-term opioid therapy for their postoperative pain than opioid-naïve patients despite their needs for higher doses of opioids during their postoperative rehabilitation.

Evidence has suggested a combination of NSAID/acetaminophen was equivalent to acetaminophen/codeine in the first four postoperative days following foot surgery, and acetaminophen/codeine was inferior regarding dropouts for side effects [29]. In a randomized trial of a cyclooxygenase (COX) inhibitor compared to tramadol sustained-release following elective hallux valgus surgery, COX inhibitors were more effective and had fewer side effects [30]. In a systematic review of randomized trials of pain management for elective foot and ankle surgery, the authors concluded that optimal pain management include locoregional analgesic techniques plus acetaminophen/NSAIDS. Opioids are only recommended as "rescue" medication [31]. Merrill et al. reported in a retrospective case series that the mean number of opioid tablets taken after foot and ankle surgery was 27, with the majority of patients having leftover medication [32]. In a more recent prospective comparative study across multiple procedures by Gupta et al. [25], patients consumed a mean of 22.5 pills, with a 95%

confidence interval of 18-27 pills. Across multiple procedure types, the mean reported pain scores on postoperative day three was four on a ten-point scale. This data suggests that most foot procedures would fit into Type I in Table 1, with a smaller number of patients fitting into Type II.

A recent systematic review of all human studies related to use of NSAIDS and bone or fracture healing was reported by Marquez-Lara et al [33]. This review highlights great variability in the literature on this issue. The authors conclude that "*withholding these medications (NSAIDs) does not have any proven scientific benefit to patients and may even cause harm by increasing narcotic requirements in cases in which they could be beneficial for pain management*." A recent prospective observational registry study of over 7,000 patients undergoing anterior cruciate ligament reconstruction, found that among those receiving NSAIDs postoperatively had no worse outcomes related to graft survival, risk of revision, or quality of life. The authors recommend minimizing the duration and dosage of NSAIDs when administering postoperatively to ensure sufficient pain relief while limiting exposure to adverse effects [34, 35].

Additional Considerations in Children and Adolescents

The pediatric population is not immune to concerns about overprescribing for surgical procedures, as demonstrated by prospective diary reporting by parents in a sample of three to 17 year olds [36] and interview and telephone follow-up out to 14 days post-discharge [37]. Both of these studies found that especially for common surgeries, such as tonsillectomy, minor abdominal and genitourinary procedures, patients often used far fewer opioid dosages than were prescribed. Evidence suggests that opioids are no more efficacious than ibuprofen for treating postoperative pain following minor orthopedic procedures in children [38]. For inguinal and umbilical hernia repair in young children, opioids may be limited to pain that “breaks through” treatment with alternating acetaminophen and ibuprofen, and were needed by only about 40% of patients [39]. Just as in adults, for more major procedures, such as spine fusion and pectus excavatum repair, analgesic medication prescribed at higher doses and potentially over a longer duration of analgesia is indicated. Across all ages, one must be cognizant of appropriate prescribing to minimize contributing to the reservoir of unused medication that may be diverted or misused, including by adolescents.

While overall children’s postoperative pain and treatment requirements are no different than their adult counterparts, young patients, in particular, require special consideration. Data show that for newborns and young infants, due to neurophysiological development, pain responses are substantially greater than in older children. Because poorly treated pain in children is associated with long-term pain processing challenges, including the risk of chronic pain syndromes, adequate treatment is imperative. In addition, however, because the liver and kidneys are still developing, differences in pharmacokinetics and pharmacodynamics must be considered and treatment regimens modified accordingly [40, 41].

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We are grateful for the time and efforts made by each of the following persons:

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Appendices

Appendix A: Bree Collaborative Members

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Bruce Smith MD	Medical Director	Regence Blue Shield
Lani Spencer RN, MHA	Vice President, Health Care Management Services	Amerigroup
Hugh Straley MD (Chair)	Retired	Medical Director, Group Health Cooperative; President, Group Health Physicians
Shawn West MD	Family Physician	Edmonds Family Medicine

Appendix B: AMDG Opioid Prescribing Guidelines Implementation Workgroup Charter and Roster

Background

The Washington State Agency Medical Directors' Group (AMDG) developed a comprehensive Guideline on Prescribing Opioids for Pain in June 2015. The Guidelines were subsequently adopted by the Bree Collaborative at the July 2015 meeting with the goal of developing implementation strategies.

Aim

To facilitate implementation of the Agency Medical Directors' Opioid Prescribing Guidelines.

Purpose

To design and carry out strategies to implement the Agency Medical Directors' Opioid Prescribing Guidelines.

Duties & Functions

The Opioid Implementation workgroup will:

- Consult members of stakeholder organizations and subject matter experts for feedback, as appropriate.
- Recommend evidence-based implementation strategies.
- Define intended outcomes, targets, metrics, and data collection methods.
- Develop change strategies as needed.
- Enlist the assistance of other Bree members as well as non-Bree members to pursue the implementation of workgroup recommendations.
- Meet as needed.
- Provide updates at Bree Collaborative meetings.
- Create and oversee subsequent subgroups to help carry out the work, as needed.

Structure

The workgroup will consist of individuals appointed by the chair of the Bree Collaborative or the workgroup chair and confirmed by Bree Collaborative members.

The chair of the workgroup will be appointed by the chair of the Bree Collaborative.

The Bree Collaborative project director will staff and provide management and support services for the workgroup.

Less than the full workgroup may convene to: gather and discuss information; conduct research; analyze relevant issues and facts; or draft recommendations for the deliberation of the full workgroup. A quorum shall be a simple majority and shall be required to accept and approve recommendations to send to the Bree Collaborative.

Roster

Name	Title	Organization
Gary Franklin, MD, MPH (Chair)	Medical Director	Washington State Department of Labor and Industries
Chris Baumgartner	Director Prescription Monitoring Program	Washington State Department of Health
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