

Recommendations for Management of Acute Dental Pain

A collaboration between the Indian Health Service Division of Oral Health (DOH)
& Indian Health Service National Committee on Heroin, Opioid and Pain Efforts (HOPE)

Content:	Page(s):
• Purpose	2
• Background & Statistics	2-3
• Clinical Summary of Common Dental Pain Medications	3
• General Recommendations	4-5
• Recommendations for Prescribing in the General Population	5-6
• Recommendations for Prescribing for Special Populations	6
➤ Allergy & Drug Intolerance	6
➤ Anticoagulant Use	7
➤ Benzodiazepine Use	7
➤ Gastro-Intestinal Conditions	8
▪ Gastric Bypass	
▪ Gastritis, Gastrointestinal Bleeding / Ulcer, Hiatal Hernia, Irritable Bowel Syndrome/ Disease, Peptic Ulcer Disease, & Ulcerative Colitis	
➤ Hepatic Conditions	8-9
▪ Alcohol Abuse	
▪ Liver Impairment	
➤ Opioid Use	9-10
▪ Abstinence-Based Treatment for Opioid Use Disorder	
▪ Chronic Pain Patients	
▪ Medication-Assisted Treatment for Opioid Use Disorder	
▪ Substance Use Disorders	
➤ Pregnancy	10
➤ Renal impairment	10
➤ Ventilation Impairment	11
• Figure 1. Recommendations for Pre-Procedural Acute Dental Pain Management (general population)	12
• Figure 2. Recommendations for Post-Procedural Acute Dental Pain Management	13-14
• Appendix A: ADA Statement on the Use of Opioids in the Treatment of Dental Pain	15
• Appendix B: Dental Specific Resources -- Acute Dental Pain Management	16
• Appendix C: Benzodiazepines, Sedative-Hypnotics, and Anxiolytics	17
• References	18-21

Purpose

The purpose of this document is to provide evidence-based guidance on prescribing for acute dental pain. This guidance seeks to reduce unnecessary opioid prescribing and assist dentists in selecting the most appropriate, effective, and safest pain medication based on patients' individual medical status. This document does not consider every medical condition but rather addresses the most common systemic medical conditions that affect acute pain medicine prescribing. This document is intended for general dentists and does not address pain management for the more complex and extensive surgeries performed by oral surgeons.

Background and Statistics

- OPIOID OVERDOSES - Prescription and non-prescription opioid misuse is a growing problem in the United States, resulting in increasing rates of overdose deaths. Opioid overdoses are highest in the American Indian / Alaska Native (AI/AN) and non-Hispanic white populations¹.
- CDC GUIDANCE ON ACUTE PAIN MANAGEMENT - In 2016, The Centers for Disease Control and Prevention (CDC) outlined recommendations for management of chronic pain, but guidance on the treatment of acute pain was lacking. However, the CDC did recognize that chronic opioid therapy often stems from the use of opioids for acute pain. It also stated, "*Clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed for the expected duration of pain severe enough to require opioids. Three days or less will often be sufficient; more than seven days will rarely be needed.*" The CDC recommends against prescribing additional day supply "just in case" the patient's pain lasts longer than the expected duration².
- AMOUNT OF DENTAL OPIOID PRESCRIPTIONS - From 2000-2009, dentists were responsible for 8% of the *overall* opioid prescriptions in the U.S. (totaling 18 million opioid prescriptions a year) and were second only to primary care physicians as opioid prescribers³. Dentists also prescribed 12.2% of all *immediate-release* opioids⁴. In 2012, dentists dropped from 2nd most prevalent prescriber of opioids to the 5th with 6.4% of *overall* opioid prescriptions. Even with this reduction as compared to other provider categories, dentists still increased their overall opioid prescriptions to 18.5 million⁵.
- UNUSED OPIOIDS FROM DENTAL PRESCRIPTIONS - Over half of the opioids prescribed after dental surgeries are not used by patients⁶. More than one-third (37.9%) of dental patients at an academic outpatient dental clinic reported some form of nonmedical use of prescription opioids and 6.5% of these respondents reported diverting their medication to others⁷. Reducing unused medication in the community could significantly impact public health and reduce likelihood of long-term opioid use/misuse².
- 3rd MOLAR EXTRACTION PRESCRIPTIONS - An important dental population exposed to opioids are the 5 million people per year undergoing 3rd molar extraction⁸. 3rd molar extractions are responsible for approximately 3.5 million young adults being exposed to opioid pain medications each year⁹. The average age range of patients receiving opioids for 3rd molar extractions is 14-24 years old^{10,11}, with a mean age of 20^{12,13}. Age 20 is also the average age at which people try using an opioid non-medically for the first time. Oral and maxillofacial surgeons in the US reported that they most commonly prescribed hydrocodone with acetaminophen, on average 20 tablets, after third molar extractions¹⁴.

- DENTAL OPIOID PRESCRIPTIONS IN PATIENTS UNDER 25 - Opioids prescribed after 3rd molar extractions are frequently the first opioid experience that adolescents and young adults have. In South Carolina in 2012-2013, dentists prescribed 44.9% of initial fill opioid prescriptions even though they made up only 8.9% of unique prescribers¹⁵. For patients aged 10 to 19 years, dentists are the main prescribers (30.8%, 0.7 million) and patients aged 10 to 29 are the most likely to abuse drugs and develop addiction¹⁶. This is important because brains don't fully develop until around age 25. Opioid use in patients under the age of 25 can alter brain development and patients that have been exposed to opioids in adolescence are more likely to develop substance use disorders and addiction. One study found that legitimate opioid use before high school graduation is independently associated with a 33% increase in the risk of future opioid misuse by the age of 23 among low risk individuals¹⁷.

Clinical Summary of Common Dental Pain Medications

- NSAIDs - Several state dental boards and associations, as well as quality improvement organizations, have endorsed the use of evidence-based, non-opioid analgesics for the treatment of acute dental pain¹⁸⁻²¹. NSAIDs provide effective pain relief for the most common acute dental complaints and procedures, as this pain is often caused by bone, pulp, and gum inflammation^{8,22-30}. For this reason, the ADA recommends NSAIDs as the first line treatment option for acute dental pain³¹. Studies have found that NSAIDs taken after a dental procedure are at least as effective (or superior to) opioid analgesics for reducing frequency and intensity of acute dental pain³². The FDA has strengthened warnings regarding the risk of cardiovascular events and other safety considerations associated with NSAIDs. However, data suggests use of most NSAIDs for < 10 days is not associated with increased risk of cardiovascular, gastrointestinal, or renal adverse events in the general population³³. Proton pump inhibitors (PPIs) can be prescribed in combination with NSAIDs for patients that have a history of gastrointestinal (GI) disturbances with NSAIDs. If one class of NSAID is not effective, another class of NSAID can be considered. Caution should be exercised when using NSAIDs for acute pain management in special populations as outlined below and in patients already taking an NSAID.
- ACETAMINOPHEN (APAP) - Acetaminophen has been shown to have a synergistic effect when administered with NSAIDs for the treatment of acute dental pain, with efficacy similar or superior to opioid therapy^{8,23,26,27,30,34,35}. The total acetaminophen dose from ALL sources (including opioid fixed dose combinations) should not exceed 3,000 mg daily (4,000 mg daily if monitored). Patients should be counseled not to combine acetaminophen prescriptions with other over the counter medications containing acetaminophen.
- OPIOIDS - Opioids can cause serious adverse effects such as sedation, respiratory depression, addiction, and death³⁶. These risks are even greater in children. Opioid medications, such as hydrocodone/acetaminophen, tramadol, and codeine/acetaminophen, have been shown in multiple studies to be less effective or no more effective than NSAIDs for the treatment of post-operative acute dental pain, as they do not adequately control underlying inflammation that contributes to acute dental pain^{8,24,25,29,37}. Additionally, there are more adverse effects associated with opioid therapy than other analgesic medications. Therefore, opioids should be reserved for severe pain after optimization of other medication classes or for patients that cannot take other pain medications such as NSAIDs or APAP. Also, codeine is contraindicated in children < 12 years of age and tramadol is contraindicated in children < 18 years of age. All patients should be counseled not to combine acetaminophen/opioid combination prescriptions with other over the counter medications containing acetaminophen.

General Recommendations

- Follow the recommendations laid out in the ADA Statement on the Use of Opioids in the Treatment of Dental Pain. *See Appendix A.*
- Dentists should be knowledgeable about educational and consultative services available to help them with decisions regarding opioid prescribing. *See Appendix B.*
- Dentists should be knowledgeable about medications, such as benzodiazepines, that cause sedation and should avoid prescribing opioids to patients who are currently taking sedating medications. *See Appendix C.*
- Dentists practicing within the Indian Health Service are required to complete responsible opioid prescribing curriculum per IHS Special General Memo 16-05. Specifically all Federal prescribers, contractors (that spend 50 percent or more of their clinical time under contract with the Federal Government), clinical residents and trainees are expected to comply with this mandatory training requirement. To successfully complete this requirement, all prescribers meeting the above established criteria, must pass the post test of the IHS Essential Training on Pain and Addictions course. Dental prescribers must also complete refresher training every three years.
- Address pain control expectations of patients, with the goal of 30%-50% pain reduction. Patients should be educated that post-operative pain is often less than pre-operative pain if infection or pulpal inflammation was present. A pain medication that was not effective prior to treatment may be sufficient post-operatively.
- Extended-release / long-acting opioid formulations should not be used for acute dental pain.
- If opioid therapy is being considered, patients and/or guardians should be counseled on the risks of opioid therapy, including adverse effects and risk of misuse and abuse with opioid medications.
- Dentists should be knowledgeable about local substance abuse programs / resources and become comfortable referring patients to these programs and discussing patient resources.
- Medical history questionnaires should include questions about substance use, abstinence-based therapy, or medication-assisted therapy for opioid misuse³⁸. Review of medical history, including current and past substance use history, should occur at each dental visit.
- Dentists practicing in clinics attached to health centers and hospitals should consider utilizing urinary drug screening whenever an opioid prescription is being considered but current drug or alcohol use is suspected.
- The IHS strongly recommends utilizing the prescription drug monitoring program (PDMP) any time opioid therapy is being considered for any duration or quantity and documenting that this was done, along with any significant PDMP findings. This is a requirement for all opioid prescriptions greater than 7 days.
- Surgical intervention to clean/remove the infected tissue is the standard of care for dental pain due to underlying infections. Adjunctive antibiotics and topical antiseptic mouth rinses (such as chlorhexidine gluconate) may be indicated if the patient has persistent infection, increased swelling, cellulitis, malaise, fever, prolonged healing, bisphosphonate use, elevated blood glucose, or is significantly immunocompromised to address the pain associated with infection^{33,39,40}. Post-operative pain lasting more than 3 days may be an indication of a post-operative infection or alveolar osteitis.
- Pain that increases 2-3 days post-operatively may be an indication of an alveolar osteitis, which is best treated with the placement of medicament into the extraction site. Opioid medications are generally not indicated for the treatment of alveolar osteitis.

- Selection of post-procedural pain management agent(s) should be guided by level of trauma to the tissue during the surgical intervention (*Figure 2*). Risk of increased post-operative pain and complications are also associated with increases in time it takes to complete a surgical procedure.
- Dental programs should establish relationships with behavioral health resources within their communities and assist patients with accessing substance use behavioral health services.
- The recommendations in this document are focused on teenage and adult patients and are intended for general dentists. It is understood that there are some dental specialists, namely oral surgeons, within IHS that occasionally perform unique and complex surgical procedures that may require prescribing opioids in excess of these recommendations.

Recommendations for Prescribing in the General Population:

- Pre-operative pain management:
 - Using a single dose oral NSAID (*see figure 1*) 30-60 minutes prior to dental procedures may delay onset and reduce intensity of post-procedural pain, though contraindications and perioperative bleeding risks must be considered^{37,41-44}. The use of a pre-operative NSAID is not recommended in procedures anticipated to introduce significant trauma or bleeding.
 - Consider the use of an antiseptic mouthrinse, such as chlorhexidine gluconate, to promote healing, prevent post-operative infection, and reduce post-operative pain.
- Pre-operative or post-operative pain management:
 - The use of long-acting local anesthetics (e.g. bupivacaine) 5 minutes prior to procedure has been shown to significantly reduce, if not eliminate, acute post-operative dental pain following procedures such as third molar extraction⁴³, reducing the amount of oral post-operative analgesics necessary for adequate pain control.
 - The use of long-acting local anesthetics (e.g. bupivacaine) immediately post-procedurally has also been shown to significantly reduce post-operative pain intensity, onset, and oral analgesic requirements necessary for adequate pain control⁴⁵⁻⁴⁶.
 - Long-acting local anesthetics are contraindicated for children under 12, pregnant women, and patients with an amide anesthetic or sodium metabisulfite allergy / sensitivity. Use with caution in elderly patients. Take care to prevent local anesthetic overdoses when used in combination with other local anesthetics.
- Post-operative pain management:
 - Consider prescribing an antiseptic mouthrinse, such as chlorhexidine gluconate, to start 24 hours post-extraction, or immediately following treatment involving tissue trauma only, to promote healing and reduce post-operative pain.
 - Utilize non-pharmacological pain management strategies for post-procedural pain management (ice packs, heat, dietary restrictions, rest, etc.).
 - For home management of post-procedural acute dental pain utilizing NSAIDs and/or acetaminophen, consider scheduled analgesic dosing, rather than “as needed.”
 - Post-procedural analgesic selection should be guided by procedure type, amount and duration of trauma, underlying cause of pain, and expected pain scores.
 - General recommendations below are based on current literature and availability of formulations / dosages of NSAIDs and APAP at IHS and Tribal facilities. They do not take patient’s individual medical conditions into account:

- **MILD PAIN:** NSAIDs (e.g. ibuprofen 400 mg q6h) or acetaminophen (325 - 500 mg q6h) should be utilized as the first line analgesic for unless contraindicated.
- **MODERATE PAIN:** NSAIDs (e.g. ibuprofen 400-800 mg q6h) + acetaminophen (500-650 mg q6h or 1,000 mg q8h) should be utilized as the first line analgesic unless contraindicated.
- **SEVERE PAIN:** NSAIDs (e.g. ibuprofen 400-800 mg q6h) + acetaminophen (325 mg q6h) + low dose opioid (e.g. hydrocodone/acetaminophen 5/325 mg q6h) should be utilized as the first line analgesic unless contraindicated. The opioid prescription should generally be limited to three days, unless indicated by significant trauma and/or infection.

Recommendations for Prescribing for Special Populations:

- Pre-operative pain management:
 - Pre-operative NSAIDs should be used with extreme caution in patients with clotting disorders or taking anticoagulants. Standard precautions and contraindications regarding NSAIDs, as outlined below, should also be followed.
 - Consider the use of an antiseptic mouthrinse without alcohol in patients with a history of substance use disorder to prevent relapse.
- Pre-operative or post-operative pain management:
 - Long-lasting anesthetics must be used with caution in patients where overall epinephrine use must be reduced due to systemic conditions such as:
 - Heart disease (*e.g. arteriosclerotic heart disease, cerebral vascular insufficiency, heart block, hypertension, and use of blood pressure medications or vasopressors*)
 - Hyperthyroidism
 - Seizures
 - Severe liver disease
 - History of aneurysm or stroke
 - Medication use (*e.g. corticosteroids, MAOIs, Maprotiline, sedatives, and tricyclic antidepressants*)
- Post-operative pain management:
 - Consider prescribing an antiseptic mouthwash without alcohol in patients with a history of substance use disorder to prevent relapse, if indicated.

Allergy & Drug Intolerance ⁴⁷

- True medication allergies are caused by an immune response to a medication. Symptoms include rash, hives, or more severe symptoms such as anaphylaxis. For true medication allergies, agents from the same drug class should be avoided.
- Other reactions, such as generalized flushing, sweating, nausea, vomiting, and upset stomach, are considered pseudo-allergies or drug intolerances and can often be avoided if the medication is taken with food or by selecting an alternative agent in the same drug class.
- If a patient has multiple drug intolerances to analgesics being considered for post-operative pain management, consider the following:
 - How severe was the drug intolerance?
 - Has the patient previously tolerated other medications in the same class?
 - Can a medication, such as a PPI, be prescribed to alleviate or minimize side-effects?

Anticoagulant Use

- Scheduled acetaminophen should be considered first line for mild post-operative pain and pre-operative pain control.
- Avoid pre-operative NSAIDs.
- If low-dose daily aspirin (81 mg) is the only anticoagulant / antiplatelet medication the patient is taking, make sure the aspirin is taken at least 2 hours prior to taking an NSAID and aspirin is taken at least 8 hours after NSAID to allow the aspirin to properly reduce the risk of heart attack or stroke. NSAIDs listed in order of most likely to least likely to interfere with antiplatelet activity of aspirin:
 1. ibuprofen
 2. naproxen and celecoxib
 3. diclofenac
- NSAIDs can irritate the GI mucosa resulting in an increased risk of GI bleeds and should be prescribed with extreme caution in patients taking anticoagulants or antiplatelet agents. If a post-operative NSAID is necessary, prescribe a PPI concomitantly to minimize GI irritation.
- If opioid or NSAID therapy must be used, utilize lowest dose for the shortest day supply necessary to adequately manage acute pain⁸.
- Consider topical tranexamic acid administration if perioperative bleeding is a concern.
- Common anticoagulants include:
 - warfarin (Coumadin, Jantoven)
 - apixaban (Eliquis)
 - dabigatran (Pradaxa)
 - edoxaban (Savaysa)
 - rivaroxaban (Xarelto)
- Common antiplatelet agents include:
 - aspirin
 - clopidogrel (Plavix)
 - prasugrel (Effient)
 - ticagrelor (Brilinta)

Benzodiazepine Use ⁴⁸

- Concurrent use of benzodiazepines and opioid medications should be avoided as both medication classes carry a black box warning outlining the increased risk of sedation, respiratory depression, and death when used concomitantly.
- If opioid therapy is necessary, the least potent opioid at the lowest dose sufficient to manage pain should be utilized and the day supply should not be in excess of the duration of pain expected. Also consider delaying opioid therapy as long as possible after benzodiazepine administration.
- If a pre-procedural benzodiazepine is indicated to manage patient's dental anxiety, limit benzodiazepine to a single administration of the lowest effective dose and utilize a benzodiazepine with a quick onset and short half-life such as:
 - alprazolam (Xanax) 0.25-0.5 mg
 - lorazepam (Ativan) 0.5 mg

Gastric Bypass ⁴⁹

- For all gastric bypass patients, avoid NSAID use due to high risk of ulceration. If NSAID must be used, concomitant administration of a proton-pump inhibitor is advised.
- For the first 2 months post-gastric bypass procedure, medications should be in liquid dosage form. Pain medications available in liquid form include:
 - acetaminophen
 - codeine/acetaminophen
 - hydrocodone/acetaminophen
 - ibuprofen
- For 3+ months post-gastric bypass patients, tablet dosage forms smaller than an M&M candy are acceptable, otherwise liquid formulations are advised.

Gastritis, Gastrointestinal Bleeding / Ulcer, Hiatal Hernia, Irritable Bowel Syndrome/Disease, Peptic Ulcer Disease, and Ulcerative Colitis

- NSAID use should be avoided.
- If NSAID deemed necessary, use the lowest effective dose (200-400 mg per dose) for the shortest duration of time and concomitantly prescribe a proton pump inhibitor.

Alcohol Dependency

- Avoid or significantly limit acetaminophen for patients currently drinking as alcohol increases acetaminophen toxicity risk, especially in patients that already have liver damage.
- Avoid opioids due to increased respiratory suppression and sedation.

Liver Impairment ⁵⁰⁻⁵⁴

- Mild liver impairment (Child-Pugh class A)
 - Short term use of standard doses of all oral analgesics is likely safe.
- Moderate liver impairment (Child-Pugh class B, fibrosis, compensated cirrhosis)
 - Total acetaminophen intake (from all sources) should be limited to 2-3 grams daily and is the preferred analgesic in this patient population.
 - Low dose NSAIDs may be used for the shortest possible duration but diclofenac should be avoided due to increased incidence of hepatotoxicity.
 - If opioid therapy is necessary, consider non-acetaminophen containing opioid medications, such as tramadol, at the lowest effective dose with prolonged dosing intervals. The metabolism of codeine to morphine (active metabolite) is impaired in liver dysfunction, so it should be avoided.
 - Chlorhexidine gluconate without alcohol should be utilized rather than formulations with alcohol (if indicated).
- Severe liver disease (Child-Pugh class C, decompensated cirrhosis with ascites or esophageal varices)
 - Acetaminophen is the analgesic of choice in this patient population, but the total acetaminophen intake (from all sources) should be limited to 1 gram daily.
 - NSAIDs should be avoided.

- Opioid therapy should be avoided due to risk of adverse effects (sedation, respiratory depression) in these patients at high risk of hepatic encephalopathy. If opioid therapy is necessary, use the lowest effective dose with prolonged dosing intervals. Codeine should be avoided.
 - Chlorhexidine gluconate without alcohol should be utilized rather than formulations with alcohol (if indicated).
- If concurrent ethanol abuse (diagnosed alcohol use disorder, CAGE questionnaire score ≥ 2 , AUDIT questionnaire score ≥ 8)⁵⁴
 - Dentists should consider brief intervention and referral to treatment for patients with substance use disorders.
 - Acetaminophen should be avoided (from all sources).
 - Chlorhexidine gluconate without alcohol should be utilized rather than formulations with alcohol (if indicated).

Abstinence-Based Treatment for Opioid Use Disorder ³⁸

- Opioid medications for pain management should be avoided as patients considered “opioid-naïve” are at higher risk for opioid overdose at smaller doses of opioid medications and could contribute to relapse of substance use.
- Chlorhexidine gluconate without alcohol should be utilized (if indicated).

Chronic Pain Patients ^{18,31,38}

- Dentists should consider consulting with patient’s chronic opioid prescriber prior to prescribing opioid medications; often patients in these programs have a contract preventing the use of opioid medications from other sources, and opioid prescriptions could violate this contract.
- If opioid therapy is necessary for adequate pain control, higher doses of opioids or more frequent dosing intervals may be necessary for acute pain management
- The risk of adverse effects from opioids, such as respiratory depression and death, likely outweigh any analgesic efficacy at doses ≥ 50 MMEs (morphine milligram equivalents) per day³. Therefore, opioid therapy should be avoided for patients taking ≥ 50 MMEs per day of chronic opioid prescriptions.

Medication-Assisted Treatment for Opioid Use Disorder ³⁸

- Dentists should consider consulting with patient’s medication-assisted treatment provider prior to prescription of opioid medications; often patients in these programs have a contracts preventing the use of opioid medications from other sources and opioid prescriptions could violate this contract.
- If medication assisted treatment is opioid antagonist, opioid use should be avoided due to reduced efficacy. Opioid antagonists include:
 - buprenorphine/naloxone (Bunavail®, Suboxone®, Zubsolv®)
 - bupropion/naltrexone (Contrave®)
 - naltrexone (ReVia®, Vivitrol®)
 - naloxone (Narcan®)

- Opioid agonists used for medication-assisted treatment have a half-life that is much longer than that of immediate release opioids. This leads to decreased efficacy of opioids used in the acute dental setting, but could contribute to greater risk of adverse effects. Opioids should be avoided in this population. If opioid therapy is necessary for adequate pain control, higher doses of opioids or more frequent dosing intervals are necessary for the treatment of acute pain, which leads to a substantially higher risk of overdose death. The risks of such medications likely outweigh the efficacy of opioids in this setting. Opioid agonists include:
 - methadone (Dolophine®, Methadose®)
 - buprenorphine (Buprenex®, Probuphine®, Buprenex®, Belbuca®, Butrans®)
 - buprenorphine/naloxone (Bunavail®, Suboxone®, Zubsolv®)
- Chlorhexidine gluconate without alcohol should be utilized (if indicated).

Substance Use Disorders ³⁸

- Dentists should consider screening, brief intervention, and referral to treatment (SBIRT) for patients with substance use disorders. <https://www.ihs.gov/asap/sbirt/>
- Opioid medications should be avoided due to unknown interactions with illicit substances, and propensity of opioid medications to contribute to dependence.
- Chlorhexidine gluconate without alcohol should be utilized (if indicated).

Pregnancy ^{55,56}

- Acetaminophen is the recommended first-line analgesic in pregnant women.
- Avoid the use of long-acting local anesthetics (use Lidocaine only).
- NSAIDs should be used minimally during 1st trimester and avoided after 20 weeks.
- Opioids should be avoided. If Acetaminophen alone does not adequately control pain, the patient's primary care provider or obstetrician should be consulted to discuss pain control options.

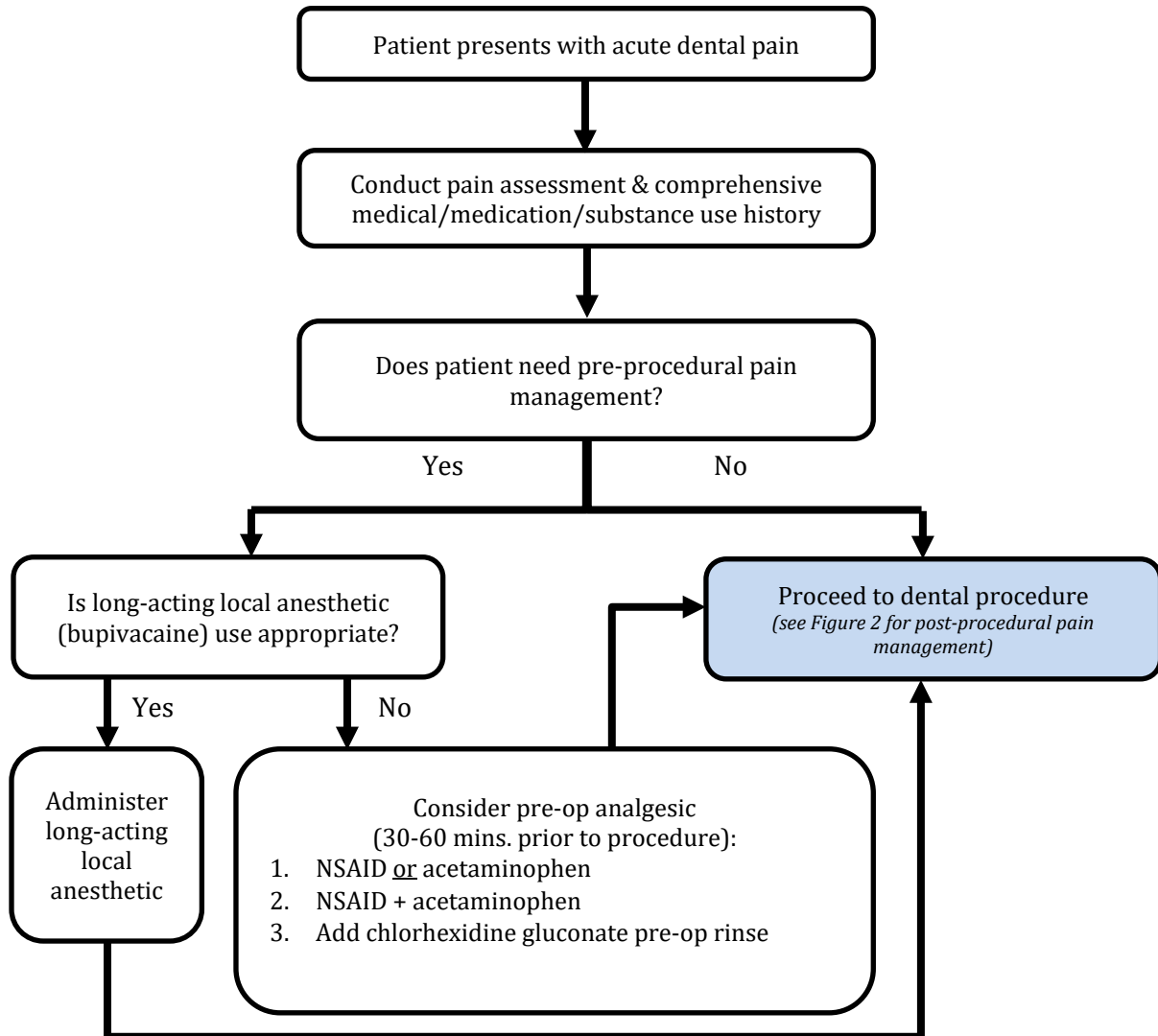
Renal impairment

- Codeine should be avoided for all patients with renal impairment.
- NSAIDs should be avoided if:
 - Creatinine Clearance [CrCl] <30 mL/min.
 - Estimated Glomerular Filtration Rate [eGFR] <30 mL/min.
 - Estimated Glomerular Filtration Rate [eGFR] 30 - 60 mL/min. when there is concurrent disease, such as diabetes.
- Acetaminophen and acetaminophen/opioid combinations require prolonged dosing intervals in patients with significant renal impairment:
 - Glomerular Filtration Rate [GFR] 10-50 mL/min/1.73m², limit dosing to q6h.
 - Glomerular Filtration Rate [GFR] <10 mL/min/1.73m², limit dosing to q8h.
 - For kids with intermittent dialysis, limit dosing to q8h.
- If an opioid is required, tramadol is the opioid of choice. It should, however, be reduced to 100 mg q12h if Creatinine Clearance [CrCl] <30mL/min.

Ventilation Impairment

- Opioids cause respiratory suppression and can worsen respiratory conditions leading to dangerous respiratory suppression or death.
- Avoid opioids when ventilation is impaired by moderate – severe:
 - Asthma
 - Bronchitis
 - Chronic Pulmonary Obstruction Disease
 - Emphysema
 - Sleep Apnea

Figure 1. Recommendations for Pre-Procedural Acute Dental Pain Management (General Population)



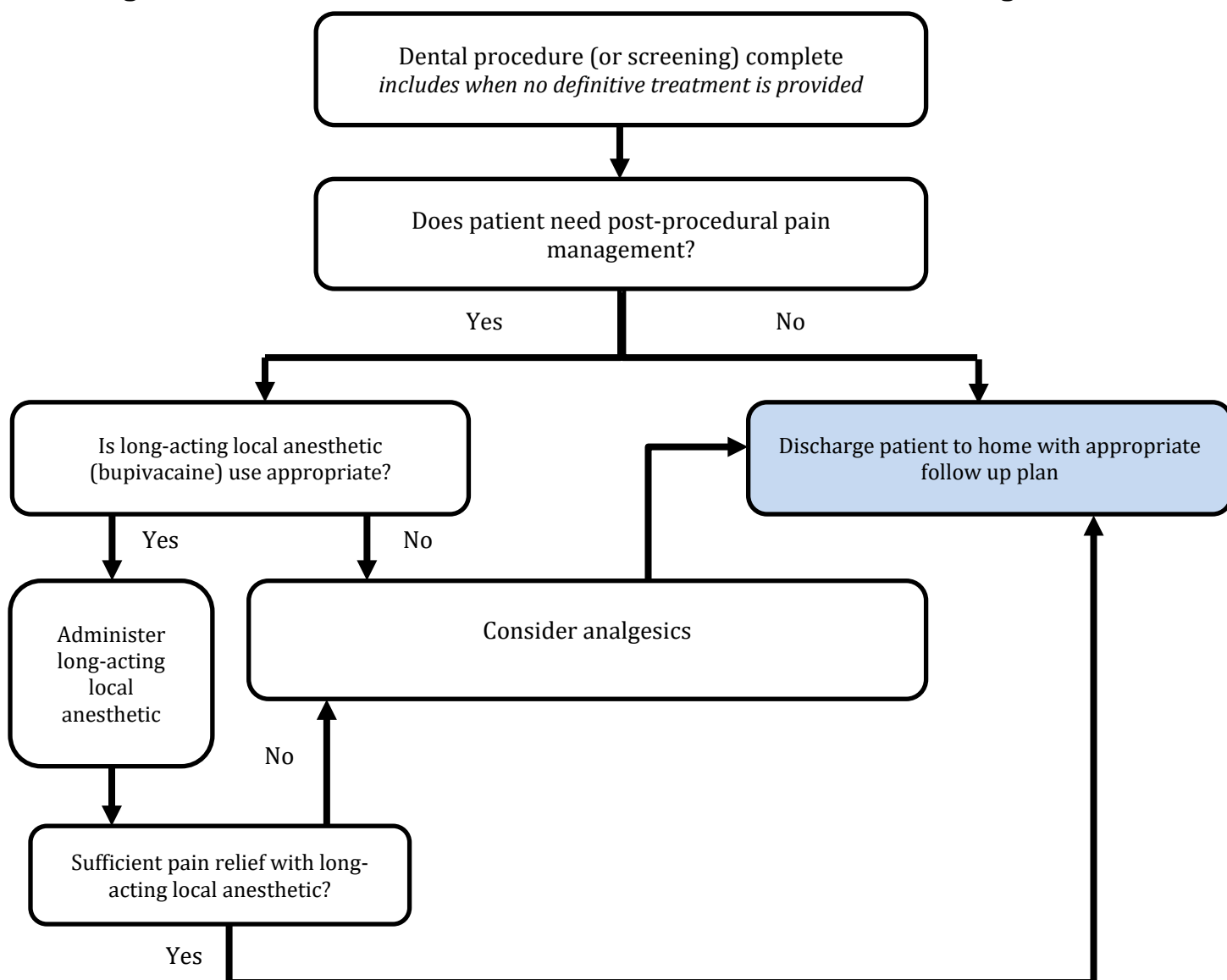
PRE-OPERATIVE NSAIDs*

Preoperative Medications	Recommended Dose	Timing
Ibuprofen	400 mg	30 mins. prior to procedure
Naproxen Sodium	550 mg	1 hr. prior to procedure**
Naproxen	500 mg	1 hr. prior to procedure
Diclofenac Potassium	100 mg	30 mins. prior to procedure
Diclofenac Sodium	50 mg	1 hr. prior to procedure
Acetaminophen	650 mg	30 mins. prior to procedure

*NSAIDs list is not all-inclusive; NSAID selection should be guided by patient-specific factors, and individual facility protocols and medication formulary

**Naproxen Sodium has faster absorption and onset than Naproxen base.

Figure 2. Recommendations for Post-Procedural Acute Dental Pain Management



POST-OPERATIVE NSAIDs*

NSAID	Recommended Dose	Max Daily Dose	T _p ** (hours)	t _{1/2} (hours)	Analgesic Onset (hours)	Analgesic Duration (hours)
PROPIONIC ACIDS						
Ibuprofen	400-800 mg q6h	3,200 mg	1-2	1.8-2	0.5	4-6
Naproxen (base)	500 mg q12h <u>or</u> 250 mg q6h	1,000 mg	2-4	12-15	1	up to 7
Naproxen Sodium	550 mg q12h <u>or</u> 275 mg q6h	1,100 mg	1-2	12-13	1	up to 7
ACETIC ACIDS						
Diclofenac Sodium	50 mg q8h	150 mg	2-3	1-2	1	4-6
Diclofenac	(can do 100 mg loading dose)		1-2	1-2	0.5	4-6
Etodolac	400 mg q8h <u>or</u> 200 mg q6h	1,200 mg	1-2	7.3	0.5	4-12

** T_p = Time to peak response

POST-OPERATIVE OPIOIDS*

Opioid	Recommended Dose	Morphine Equiv. Dose
Codeine / Acetaminophen	30mg /300mg q6h	4.5 mg per dose
Hydrocodone / Acetaminophen	5mg/325mg q6h	5 mg per dose
Tramadol**	50mg q6h	5 mg per dose

*Opioids and NSAIDs lists are not all-inclusive; selection should be guided by patient-specific factors, individual facility protocols, and medication formulary.

**Tramadol (utilized without NSAID or APAP) is usually dosed at 100mg q8h or q6h for moderate - severe dental pain.

POST-OPERATIVE PAIN MEDICATION DOSING RECOMMENDATIONS FOR THE GENERAL POPULATION

Expected Pain →	Mild to Moderate Pain (i.e. mild trauma / inflammation)	Moderate to Severe Pain (i.e. moderate trauma / inflammation)	Severe Pain (i.e. significant trauma / inflammation)
1 st line therapy	Ibuprofen 400-600 mg q6h or alternative NSAID ^{5,6,7,11} or Acetaminophen 325-650 mg q6h ⁷ ----- <i>2 day supply – scheduled dosing interval</i>	Ibuprofen 400-800 mg q6h or alternative NSAID ^{5,6,7,11} and Acetaminophen 500-650 mg q6h ⁷ ----- <i>3 day supply – scheduled dosing interval</i>	Ibuprofen 400-800 mg q6h or alternative NSAID ^{5,6,7,11} and Acetaminophen 500-650 mg q6h ⁷ and Hydrocodone/APAP 5/325 mg q6h or alternative opioid ^{1-4,7,9} ----- <i>2-3 day PRN opioid supply with scheduled NSAID/APAP dosing interval</i>
If inadequate pain control	Take both NSAID and Acetaminophen	Add PRN Hydrocodone/ APAP 5/325 mg q6h or alternative opioid ^{1-4,7,9} <i>(1 day supply)</i>	For pain extending past 72 hours, use Ibuprofen 400-800 mg q6h prn ⁷
NOTE: Acetaminophen dosage from all sources should not exceed 3,000 mg daily if patient unmonitored / 4,000 mg if monitored. ³⁷			
NOTE: Some NSAID & APAP dosage recommendations have been adjusted to accommodate what formulations are available at IHS facilities.			

NSAID SAFETY COMPARISONS

DRUG	COX-2 Selectivity (in vitro)	GI Risk	Cardiovascular Risk
ACETIC ACID - NSAIDS			
Diclofenac Na	High	Moderate	High
Etodolac	High	Low	Moderate
PROPIONIC ACID - NSAIDS			
Ibuprofen	Moderate	Low	Moderate - High
Naproxen	Low	Moderate - High	Low

*From Pharmacist's Letter / Prescriber's Letter November 2011 (PL Detail-Document #271106)

APPENDIX A:

American Dental Association Statement on the Use of Opioids in the Treatment of Dental Pain

1. When considering prescribing opioids, dentists should conduct a medical and dental history to determine current medications, potential drug interactions and history of substance abuse.
2. Dentists should follow and continually review Centers for Disease Control and State Licensing Boards recommendations for safe opioid prescribing.
3. Dentists should register with and utilize prescription drug monitoring programs (PDMP) to promote the appropriate use of controlled substances for legitimate medical purposes, while deterring the misuse, abuse and diversion of these substances.
4. Dentists should have a discussion with patients regarding their responsibilities for preventing misuse, abuse, storage and disposal of prescription opioids.
5. Dentists should consider treatment options that utilize best practices to prevent exacerbation of or relapse of opioid misuse.
6. Dentists should consider nonsteroidal anti-inflammatory analgesics as the first-line therapy for acute pain management.
7. Dentists should recognize multimodal pain strategies for management for acute postoperative pain as a means for sparing the need for opioid analgesics.
8. Dentists should consider coordination with other treating doctors, including pain specialists when prescribing opioids for management of chronic orofacial pain.
9. Dentists who are practicing in good faith and who use professional judgment regarding the prescription of opioids for the treatment of pain should not be held responsible for the willful and deceptive behavior of patients who successfully obtain opioids for non-dental purposes.
10. Dental students, residents and practicing dentists are encouraged to seek continuing education in addictive disease and pain management as related to opioid prescribing.

ADA House of Delegates Adopted: October 2016

Dosage and Duration

Resolved, that the ADA supports statutory limits on opioid dosage and duration of no more than seven days for the treatment of acute pain, consistent with Centers for Disease Control and Prevention (CDC) evidence-based guidelines, and be it further

Prescription and Drug Monitoring

Resolved, that the ADA supports dentists registering with and utilizing Prescription Drug Monitoring Programs (PDMPs) to promote the appropriate use of controlled substances for legitimate medical purposes and deter the misuse, abuse and diversion of these substances, and be it further

ADA Board of Trustees: March 2018

APPENDIX B:

Dental Specific Resources -- Acute Dental Pain Management

- **Pennsylvania Guidelines on the Use of Opioids in Dental Practice, 2015.** This document was recommended in the 2016 Guideline for Prescribing Opioids for Chronic Pain. <http://www.health.pa.gov/My%20Health/Diseases%20and%20Conditions/A-D/Documents/opioid%20dental%20prescribing%20guidelines%20-final.pdf>
 - **Dental Guideline on Prescribing Opioids for Acute Pain Management, 2016.** Developed by the Dr. Robert Bree Collaborative and Washington State Agency Medical Directors' Group with actively practicing dentists and public stakeholders. http://www.breecollaborative.org/wp-content/uploads/2017-10-26-FINAL-Dental-Opioid-Recommendations_Web.pdf
 - **American Association of Oral and Maxillofacial Surgeons White Paper, 2017. Opioid Prescribing: Acute and Postoperative Pain Management.** https://www.aaoms.org/docs/govt_affairs/advocacy_white_papers/opioid_prescribing.pdf
 - **American Dental Association free CDE courses on opioid prescribing and combating opioid abuse.** Approximately 4 free CDE courses specific to opioids each year. <https://www.ada.org/en/advocacy/advocacy-issues/prescription-opioid-abuse>
 - **Safe Opioid Prescribing for Acute Dental Pain CDE Course.** Two-hour CDE class from Boston University. https://www.opioidprescribing.com/dental_landing
 - **Substance Abuse and Mental Health Services Administration (SAMHSA)'s Providers' Clinical Support System for Opioids (PCSS—O) and Medication Assisted Treatment (PCSS—MAT).** Expert mentors are available to assist with questions or concerns about opioids and treatment of substance use disorders and free CDE specific to dentistry. <https://pcss-o.org/> and <https://pcssmat.org/>
 - **Prevention of Prescription Opioid Abuse: The role of the dentist.** JADA article, 2011. [http://jada.ada.org/article/S0002-8177\(14\)62264-9/pdf](http://jada.ada.org/article/S0002-8177(14)62264-9/pdf)
- **Also reference your state dental board's guidelines on opioid prescribing**

APPENDIX C:

Benzodiazepines, Sedative-Hypnotics, and Anxiolytics

Benzodiazepines

1. alprazolam (Niravam, Xanax, Xanax XR)
2. chlordiazepoxide (Librium, Libritabs, Poxi, Mitran)
3. clonazepam (KlonoPIN)
4. clorazepate (Tranxene T-Tab, Tranxene SD)
5. diazepam (Valium)
6. estazolam (Prosom)
7. flurazepam (Dalmane)
8. lorazepam (Ativan)
9. midazolam (Versed)
10. oxazepam (Serax)
11. quazepam (Doral)
12. temazepam (Restoril)
13. triazolam (Halcion)

Barbiturates

1. butabarbital (Butisol Sodium, Busodium)
2. butalbital (Butalbital Compound, Fiorinal)
3. mephobarbital (Mebaral)
4. phenobarbital (Solfoton, Luminal)
5. secobarbital (Seconal Sodium)

Skeletal muscle relaxants

1. carisoprodol (Soma, Vanadom)
2. cyclobenzaprine (Amrix, Fexmid, Flexeril, Tabradol)

Non-benzodiazepine hypnotics

1. chloral hydrate (Somnote)
2. eszopiclone (Lunesta)
3. meprobamate (Equanil, Miltown, MB-TAB)
4. suvorexant (Belsomra)
5. zaleplon (Sonata)
6. zolpidem (Ambien, Ambien CR, Edluar, Intermezzo, Zolpimist)

References:

1. Centers for Disease Control and Prevention. **"Prescription Opioid Overdose Data."** Accessed online at <https://www.cdc.gov/drugoverdose/data/overdose.html> Updated December 16, 2016.
2. Dowell D, Haegerich TM, Chou R. **CDC guideline for prescribing opioids for chronic pain – United States, 2016.** *JAMA.* 2016. 315(15):1624-45.
3. Governale L. **Outpatient Prescription Opioid Utilization in the US, Years 2000–2009.** 2010.
4. Golubic et al. **Opioid Prescribing in Dentistry.** *Compend CE Dent,* 2011.
5. Levy B, Paulozzi L, Mack KA, Jones CM. **Trends in Opioid Analgesic-Prescribing Rates by Specialty, U.S., 2007-2012.** *Am J PrevMed.* 2015 Sep;49(3):409-13.
6. Maughan BC, Hersh EV, et al. **Unused opioid analgesics and drug disposal following outpatient dental surgery: a randomized controlled trial.** *Drug and Alcohol Dependence.* 2016. 168:328-34..
7. **Ashrafioun L, Edwards PC, Bohnert AS, et al. Nonmedical use of pain medications in dental patients.** *Am J Drug Alcohol Abuse.* 2014;40:312–316.
8. Becker DE. **Pain management: Part 1: Managing acute and postoperative dental pain.** *Anesthesia progress* 2010; 57:67-78; quiz 9-80.
9. Friedman JW. **The prophylactic extraction of third molars: a public health hazard.** *Am J Public Health.* 2007;97:1554–1559..
10. McCabe SE, West BT, Boyd CJ. **Leftover prescription opioids and nonmedical use among high school seniors: a multi-cohort national study.** *Journal of Adolescent Health* 2013;52:480-5..
11. Miech R, Johnston L, O'Malley PM, Keyes KM, Heard K. **Prescription opioids in adolescence and future opioid misuse.** *Pediatrics.* 2015:1364..
12. Substance Abuse and Mental Health Services Administration, Office of Applied Studies. Summary of National Findings. Rockville, Md.: U.S. Department of Health and Human Services; 2010:89-94. National Survey on Drug Use and Health series H-38A, *HHS publication SMA 10-4486 Findings. Results from the 2009 National Survey on Drug Use and Health; vol 1.*
13. Snyder M, Shugars DA, White RP, Phillips C. **Pain medication as an indicator of interference with lifestyle and oral function during recovery after third molar surgery.** *J Oral Maxillofacial Surg* 2005;63(8): 1130-1137.
14. Richard C. Denisco, MD, MPH; George A. Kenna, PhD, RPh; Michael G. O'Neil, PharmD; Ronald J. Kulich, PhD; Paul A. Moore, DMD, PhD, MPH; William T. Kane, DDS, MBA; Noshir R. Mehta, DMD, MDS, MS; Elliot V. Hersh, DMD, MS, PhD; Nathaniel P. Katz, MD, MS. **Prevention of prescription opioid abuse: The role of the dentist.** *Journal of the American Dental Association (JADA).* July, 2011. 142(7): 800-810.
15. Jenna L. McCauley, PhD, J. Madison Hyer, MS, V. Ramesh Ramakrishnan, PhD, Renata Leite, DDS, MS, Cathy L. Melvin, PhD, MPH, Roger B. Fillingim, PhD, Christie Frick, RPh, and Kathleen T. Brady, MD, PhD. **Dental Opioid Prescribing and Multiple Opioid Prescriptions Among Dental Patients: Administrative data from the South Carolina Prescription Drug Monitoring Program.** *J Am Dent Assoc.* 2016 Jul; 147(7): 537–544.
16. Nora D. Volkow, MD; Thomas A. McLellan, PhD; Jessica H. Cotto, MPH; Meena Karithanom, MPH; Susan R. B. Weiss, PhD; et al. **Characteristics of Opioid Prescriptions in 2009.** *JAMA.* 2011; 305 (13):1299-1301.
17. Richard Miech, Lloyd Johnston, Patrick M. O'Malley, Katherine M. Keyes, Kennon Heard. **Prescription Opioids in Adolescence and Future Opioid Misuse.** *Pediatrics.* 2017;139(6).
18. Wainio J, Nolting F, Pedersen N. et al. **MDA protocol for assessment and treatment of oral/facial pain.** *Minnesota Dental Association.* 2016.
19. **NJDA Safe Prescribing Guidelines.** *New Jersey Dental Association.* 2016 (currently under revision to reflect changes in NJ laws).
20. **Pennsylvania guidelines on the use of opioids in dental practice.** *Pennsylvania Dental Association.* 2015.

21. Thorson D, Biewen P, Bonte B, et al. **Acute Pain Assessment and Opioid Prescribing Protocol.** *Institute for Clinical Systems Improvement*; 2014.
22. Bagan JV, Soler-Lopez B. **Evaluation of the immediate post-operative procedure after dental interventions. 24 hours follow up study.** Epico study. *Medicina oral, patologia oral y cirugia bucal.* 2011. 16(4):e573-83.
23. Barden J, Edwards JE, McQuay HJ, Wiffen PJ, Moore RA. **Relative efficacy of oral analgesics after third molar extraction.** *British dental journal.* 2004. 197(7):407.
24. Cairns B, Kolta A, Whitney E, et al. **The use of opioid analgesics in the management of acute and chronic orofacial pain.** *J Can Dent Assoc* 2014; 80: e49.
25. Jung, Y, et al. **Onset of analgesia and analgesic efficacy of tramadol/acetaminophen and codeine/acetaminophen/ibuprofen in acute postoperative pain: a single-center, single-dose, randomized, active-controlled, parallel-group study in a dental surgery pain model.** *Clinical therapeutics* 2004. 26: 1037-1045.
26. Menhinick KA, Gutmann JL, Regan JD, et al. **The efficacy of pain control following nonsurgical root canal treatment using ibuprofen or a combination of ibuprofen and acetaminophen in a randomized, double-blind, placebo-controlled study.** *Int Endod J* 2004; 37:531-41.
27. Moore PA, Hersh EV. **Combining ibuprofen and acetaminophen for acute pain management after third molar extractions: translating clinical research to dental practice.** *J Am Dent Assoc* 2013; 144:898-908.
28. Nørholt, SE. **Treatment of acute pain following removal of mandibular third molars: use of the dental pain model in pharmacological research and development of a comparable animal model.** *International journal of oral and maxillofacial surgery.* 1998. 27: 13-41.
29. Swift, James Q. **Nonsteroidal anti-inflammatory drugs and opioids: Safety and usage concerns in the differential treatment of postoperative orofacial pain.** *Journal of oral and maxillofacial surgery.* 2000 58: 8-1.
30. Urquhart E. **Analgesic agents and strategies in the dental pain model.** *J Dent.* 1994; 22(6):336-41.
31. American Dental Association. **Statement on the use of opioids in the treatment of dental pain.** *Trans.* 2005:328; 2016:XXX. Accessed online at: <https://www.ada.org/en/advocacy/advocacy-issues/prescription-opioid-abuse?source=VanityURL>
32. Dionne RA, Gordon SM, Moore PA. **Prescribing Opioid Analgesics for Acute Dental Pain: Time to Change Clinical Practices in Response to Evidence and Misperceptions.** *Compendium of Continuing Education in Dentistry.* 2016;37:372.
33. Baumgartner, JC. **Antibiotics and the treatment of endodontic infections.** *Endodontics: Colleagues for Excellence.* American Association of Endodontists. 2006.
34. Wells L, Drum M, Nusstein J, et al. **Efficacy of Ibuprofen and Ibuprofen/Acetaminophen on Postoperative Pain in Symptomatic Patients.** *Journal of Endodontics* 2011; 37:1608-12.
35. Weil K, Hooper L, Afzal Z, et al. **Paracetamol for pain relief after surgical removal of lower wisdom teeth.** *Cochrane Database Syst Rev* 2007 ;(3):CD004487.
36. Ricardo Buenaventura M, Rajive Adlaka M, Nalini Sehgal M. **Opioid complications and side effects.** *Pain physician.* 2008;11:S105-20.
37. Joshi A, Parara E, Macfarlane TV. **A double-blind randomized controlled clinical trial of the effect of preoperative ibuprofen, diclofenac, paracetamol with codeine and placebo tablets for relief of postoperative pain after removal of impacted third molars.** *British Journal of Oral and Maxillofacial Surgery.* 2004;42(4):299-306.
38. O'Neil, M, et al. **The ADA Practical Guide to Substance Use Disorders and Safe Prescribing.** New Jersey: Wiley-Blackwell. 2015.
39. Dar- Odeh N, Abu-Hammad O, Al- Omiri M et al. **Antibiotic prescribing practices by dentists: a review.** *Ther Clin Risk Manag* 2010; 6:301-306.
40. Lodi G, Figini L, Sardella A, et al. **Antibiotics to prevent complications following tooth extractions.** *Cochrane Database Systematic Review* 2012; (2): CD003811.

41. Dionne RA, Cooper SA. **Evaluation of preoperative ibuprofen for postoperative pain after removal of third molars.** *Oral Surgery, Oral Medicine, Oral Pathology.* 1978. 1;45(6):851-6.
42. Jackson DL, Moore PA, Hargreaves KM. **Preoperative nonsteroidal anti-inflammatory medication for the prevention of postoperative dental pain.** *J Am Dent Assoc.* 1989. 119(5):641-7.
43. Marković AB, Todorović L. **Postoperative analgesia after lower third molar surgery: contribution of the use of long-acting local anesthetics, low-power laser, and diclofenac.** *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology.* 2006. 102(5):e4-8.
44. Aggarwal V, Singla M, Kabi D. **Comparative evaluation of effect of preoperative oral medication of ibuprofen and ketorolac on anesthetic efficacy of inferior alveolar nerve block with lidocaine in patients with irreversible pulpitis: a prospective, double-blind, randomized clinical trial.** *Journal of endodontics.* 2010. 36(3):375-8.
45. Gordon SM, Brahim JS, Dubner R, McCullagh LM, Sang C, Dionne RA. **Attenuation of pain in a randomized trial by suppression of peripheral nociceptive activity in the immediate postoperative period.** *Anesthesia & Analgesia.* 2002. 95(5):1351-7.
46. Kaurich MJ, Otomo-Corgel J, Nagy RJ. **Comparison of postoperative bupivacaine with lidocaine on pain and analgesic use following periodontal surgery.** *Journal of the Western Society of Periodontology/Periodontal abstracts* 1997. 45(1):5.
47. Smith W. Medications. **Adverse drug reactions: Allergy? Side-effect? Intolerance?** *Australian family physician.* 2013. 42(1/2):12.
48. US Food & Drug Administration. FDA Drug Safety Communication: **FDA warns about serious risks and death when combining opioid pain or cough medicines with benzodiazepines; requires its strongest warning.** Updated 9/20/17. Accessed online at: <https://www.fda.gov/Drugs/DrugSafety/ucm518473.htm>
49. **Bariatric Surgery and Medication Use.** Accessed online at: <http://pharmacistsletter.therapeuticresearch.com/pl/ArticleDD.aspx?nidchk=1&cs=CEPDA&s=PL&pt=2&segment=6363&dd=291203>
50. Bosilkovska M, Walder B, Besson M, Daali Y, Desmeules J. **Analgesics in patients with hepatic impairment.** *Drugs.* 2012. 72(12):1645-69.
51. Medline Plus. **Acetaminophen.** Last updated 9/21/17. Accessed online at: <https://medlineplus.gov/druginfo/meds/a681004.html>
52. Chandok N, Watt KD. **Pain management in the cirrhotic patient: the clinical challenge.** *Mayo Clinic Proceedings* 2010. 85(5): 451-458.
53. Hamilton JP, Goldberg E, Chopra S, Chief JT, Runyon BA, Robson KM. **Management of pain in patients with advanced chronic liver disease or cirrhosis.** UpToDate, Waltham, MA.
54. National Institute on Alcohol Abuse and Alcoholism. **Screening for alcohol use and alcohol related problems.** Accessed online at: <https://pubs.niaaa.nih.gov/publications/aa65/aa65.htm>
55. **US Food & Drug Administration. Ibuprofen package insert.** Accessed online at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2007/017463s105lbl.pdf
56. **FDA recommends avoiding use of NSAIDs in pregnancy at 20 weeks or later because they can result in low amniotic fluid: NSAIDs may cause rare kidney problems in unborn babies.** Accessed online at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2007/017463s105lbl.pdf

Last Revised: November, 2020