Acute Dental Pain Management & the National Opioid Crisis

The Cost of the Opioid Crisis, The New Yorker, Sept. 18, 2017
OBJECTIVES

1. Understand how dentists have historically contributed to the opioid crisis and why HOPE participation by dentists is critical

2. Know that opioids are no longer a first line medication to address dental pain

3. Know how to utilize IHS resources to more appropriately prescribe pain medications (EHR, medical staff, guidelines, etc.)
ADA Survey Center (2004) – survey of 563 OMFS
*Prescribing Practices After 3rd Molar Extractions*

- 73.5% of OMFS said the most preferable post-operative pain reliever was ibuprofen
- 85% of OMFS said they almost always prescribed an opioid
- 64% of OMFS said the opioid of choice was hydrocodone with acetaminophen (Vicodin) – average of 20 tabs.

DENTAL RX MISUSE & DIVERSION

- >½ of opioids prescribed after dental surgeries are not used by patients for dental pain\(^4\)

- 38% of dental patients at a dental school clinic reported some form of non-medical use of prescription opioids

- 6.5% of these respondents reported diverting their unused opioids\(^5\)

\(→\) DDS PRESCRIPTIONS RESULT IN OPIOIDS FOR MISUSE

From 2007-2012, dentists ranked 4th in prescribers of opioids.

• 2000-2009, DDS prescribed 8% of the **overall** opioid prescriptions in the U.S. (18 million opioid prescriptions a year) and were 2\(^{nd}\) only to PCP as opioid prescribers\(^1\)

• 2000–2009, DDS prescribed **12.2%** of all **immediate-release opioids** (for comparison, family physicians prescribed **15%**)\(^2\)

• 2012, DDS dropped from 2\(^{nd}\) most prevalent prescriber of opioids to the 5\(^{th}\) with **6.4%** of **overall** opioid prescriptions, but still prescribed **18.5 million** opioid prescriptions in 2012\(^3\)

⇒ **DDS PRESCRIBE A LOT OF OPIOIDS**

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PATIENT’S FIRST EXPOSURE TO OPIOIDS

- 5 million people per year undergo 3rd molar extraction\(^6\)

- This results in \(~3.5\) million young adults being exposed to opioid pain medications each year\(^7\)

- Average age of patients receiving opioids for 3\(^{rd}\) molar extractions is 14-24 years old\(^8,9\), with a mean age of 20\(^{10,11}\)

- Age 20 is also the average age at which people try using an opioid non-medically for the first time\(^{10,11}\)
OMFS in U.S. reported most commonly prescribing Vicodin, on average **20 tablets**, after third molar extractions. 

3rd MOLAR EXTRACTIONS ARE OFTEN A PATIENT’S 1ST INTRODUCTION TO AN OPIOID

12. 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.
Percentage of Prescriptions Dispensed for Opioid Analgesics from Outpatient US Retail Pharmacies by Age and Physician Specialty, 2009

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 as adults.


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 individuals\textsuperscript{15}.

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 prescribers\textsuperscript{13}.

For patients aged 10 to 19 years, dentists are the main prescribers (30.8%) and patients aged 10 to 29 are the most likely to abuse drugs and develop addiction\textsuperscript{14}.

\textbf{\textgreater} DDS ARE ONE OF THE MOST LIKELY PROVIDERS TO PRESCRIBE AN OPIOID TO A PATIENT WHOSE BRAIN IS NOT FULLY DEVELOPED.
EXISTING EVIDENCE FOR ACUTE DENTAL PAIN RX

• Studies have found that NSAIDs taken after a dental procedure are at least as effective (or superior to) opioid analgesics for reducing frequency & intensity of acute dental pain\textsuperscript{16}

• Studies have shown that NSAID + APAP are synergistic when combined and are more effective than opioids in treating dental pain\textsuperscript{17}

• Dosing reductions (2013) of APAP in Hydrocodone + APAP formulations (\textit{changed from 500/750 mg to 300/325 mg}), the amount of APAP as most commonly dosed (1 Vicodin q4-6h) is often suboptimal w/o NSAID\textsuperscript{18}


For patients in the ED with acute extremity pain, no significant differences in pain reduction:

- Oxycodone 5mg + 325mg Acetaminophen (4.4 pt. reduction)
- Ibuprofen 400mg + 1,000mg Acetaminophen (4.3 pt. reduction)
- Codeine 30mg + 300mg Acetaminophen (3.9 pt. reduction)
- Hydrocodone 5mg + 300mg Acetaminophen (3.5 pt. reduction)

Pain re-accessed after 2 hours using 11-point numerical rating scale (NRS)

NNT to achieve 50% pain reduction over 4-6 hrs.

Prescribing Recommendations for the Treatment of Acute Pain in Dentistry

By Elliot V. Hersh, DMD, MS, PhD; William T. Kane, DDS, MBA; Michael G. O’Neil, PharmD; George A. Kenna, PhD, RPh; Nathaniel P. Katz, MD; Stephanie Golubic, DMD, MBE; and Paul A. Moore, DMD, PhD, MPH

From: **Compendium**
April 2011

➤ Publication was a collaboration of dentists, pharmacist, & a physician
WHY RX OPIOIDS AT ALL IF THEY ARE LESS EFFECTIVE THAN NSAID + APAP?

• When NSAID may be contraindicated
  ➢ allergies, kidney disease, some GI diseases, bleeding disorders, anticoagulant use, pregnancy, severe liver impairment (*most common reasons*)

• When anticipate severe pain and NSAID + Opioid / APAP indicated
CHALLENGES IN IHS

1. Addiction disproportionately affects people in poverty

2. Addiction is harder to kick in poverty

3. Medically compromised population / disease rates are higher

4. Highly medicated population

5. We do a lot of extractions that require pain management
OPPORTUNITIES IN IHS

UDS

• Can request a urinary drug screening if you are concerned that a patient may already be using an opioid, alcohol, etc. to more safely prescribe opioid

• Consider that some patients self-medicate when they are in pain

EHR

• Can make more informed decision about prescribing than just relying on patients to self-report in health history questionnaire (→ HHQ + EHR)

• EHR problem list isn’t always accurate or complete (much like HHQ), but it often gives us the clues we need to f/u
IN-HOUSE PHARMACY / NURSES / PROVIDERS

• Your medical co-workers can help you when medical history or behavior gets complicated! They often know the patients better and can fill in gaps.

• Patients on chronic opioids generally have pain contracts → your facility will have policies about prescribing to these folks.

• Calling to inquire about labs is critical! EHR may say ‘Kidney Disease’ but you should call pharmacy / nursing and ask about renal labs for clarification. Sometimes diagnoses are outdated / wrong / missing. Often a patient had 1 high lab test 6 years ago (that triggered a Dx) but all labs since then are normal.....
CAC / IT can design an EHR dental health summary specific to your needs and can limit it to specific timeframes (for each category):

1. PCP
2. Allergies
3. Problem List (*diagnoses*)
4. Medications (*dispensed at SU pharmacy*)
5. Lab Results
6. Patient Postings (*warnings, pain contracts*)
7. Other requirements (*eligibility, demographics, insurance info., etc.*)

→ *generally only helpful if patient gets his/her medical treatment at your SU*
Make sure to ask if the patient also gets care or prescriptions elsewhere! Maybe they see a cardiologyor get some additional meds at an outside pharmacy (aren’t available through IHS).
Establish working relationships with your pharmacy staff and don’t be afraid to ask them for help with prescribing. They have more training & experience in medication contraindications, interactions, etc. They want to be asked BEFORE you send the patient down to the pharmacy to pick up a medication that is not appropriate. They don’t want to be the person that says “NO” after-the-fact.
UTILIZE YOUR STATE’S PDMP / PMP

- You may be able to designate this to auxiliary staff or ask pharmacy to check it for you.

- Check for current / history of opioid prescriptions BEFORE you tell the patient what you are going to prescribe and BEFORE you send the patient down to the pharmacy to pick up their prescription.

- Strongly recommend this is documented in clinical notes.
HOPE & DOH COLLABORATION ON DENTAL GUIDELINES

• Created by a workgroup composed of IHS dentists and pharmacists. Reviewed, revised, & approved by IHS oral surgeons, ADOs, DOH, and HOPE committee.

• Evidence-based → Developed utilizing literature review, ADA & state recommendations, Dental Management of the Medically Compromised Patient Textbook, and Drug Information Handbook for Dentistry.

• Tailored to IHS because it references medications / dosages on IHS formulary and includes our challenges & advantages
• Outlines general guidance for dental acute pain prescribing for adults—general population

• Outlines general guidance for dental acute pain prescribing for adults—medically compromised & special populations

• Includes pain management decision tree & info. on specific opioids and NSAIDs

• Recommends additional dental-specific resources on dental pain prescribing

→ Gives more specifics to assist with pain medication selection
IHS Dental Portal: [www.ihs.gov/DOH]
1. **Recommendations for Acute Dental Pain Management** – Reviewed & Approved by DOH & HOPE → 21 pages, covers only most common medical conditions

2. **Pain Meds Selection Spreadsheet** – Meant to be a template that needs to be adapted and updated locally → assists w/ selecting pain meds
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.

- **Purpose**
- **Background & Statistics**
- **Clinical Summary of Common Dental Pain Medications**

**Clinical Summary of Common Dental Pain Medications**

**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\(^{11,12,15,16,19,20,24}\). 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.
- General Recommendations
- Recommendations for Prescribing in the General Population
- Recommendations for Prescribing for Special Populations

**Recommendations for Prescribing & Administering 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. 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.

**Recommendations for Prescribing & Administering 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.
*Recommendations for only the most common or significant medical conditions, is not all-inclusive

- Recommendations for Prescribing for Special Populations
  - Allergy & Drug Intolerance
  - Anticoagulant Use
  - Benzodiazepine Use
  - Gastro-Intestinal Conditions
    - Gastric Bypass
    - Gastritis, Gastrointestinal Bleeding / Ulcer, Hiatal Hernia, Irritable Bowel Syndrome / Disease, Peptic Ulcer Disease, & Ulcerative Colitis
  - Hepatic Conditions
    - Alcohol Abuse
    - Liver Impairment
  - Opioid Use
    - Abstinence-Based Treatment for Opioid Use Disorder
    - Chronic Pain Patients
    - Medication-Assisted Treatment for Opioid Use Disorder
    - Substance Use Disorders
  - Pregnancy
  - Renal Impairment
  - Ventilation Impairment

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**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] < 30 mL/min.
Figure 1. Recommendations for Pre-Procedural Acute Dental Pain Management (general population)

1. Patient presents with acute dental pain
2. Conduct pain assessment & comprehensive medical/medication/substance use history
3. Does patient need pre-procedural pain management?
   - Yes
     - Administer long-acting local anesthetic
     - Consider pre-op analgesic and/or anti-aseptic (30-60 mins. prior to procedure):
       1. NSAID
       2. NSAID + acetaminophen in combination
       3. Antiseptic rinse (i.e. chlorhexidine gluconate)
   - No
     - Proceed to dental procedure (see Figure 2 for post-procedural pain management)

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

1. Dental procedure (or screening) complete includes when no definitive treatment is provided
2. Does patient need post-procedural pain management?
   - Yes
     - Administer long-acting local anesthetic
     - Consider analgesics
   - No
     - Sufficient pain relief with long-acting local anesthetic?
     - Yes
     - Discharge patient to home with appropriate follow up plan
     - No

Table: POST-OPERATIVE NSAIDs*

<table>
<thead>
<tr>
<th>NSAID/NSAID Combination</th>
<th>Recommended Dose</th>
<th>Max Daily Dose</th>
<th>Tp** (hours)</th>
<th>Td (hours)</th>
<th>Analgesic Onset (hours)</th>
<th>Analgesic Duration (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibuprofen</td>
<td>400-800 mg q6h</td>
<td>1,200 mg</td>
<td>1-2</td>
<td>18-2</td>
<td>0.5</td>
<td>4-6</td>
</tr>
<tr>
<td>Naproxen (base)</td>
<td>500 mg q12h to 350 mg q6h</td>
<td>1,000 mg</td>
<td>2-4</td>
<td>12-15</td>
<td>1</td>
<td>up to 7</td>
</tr>
<tr>
<td>Naproxen Sodium</td>
<td>550 mg q12h to 375 mg q6h</td>
<td>1,100 mg</td>
<td>1</td>
<td>12-15</td>
<td>1</td>
<td>up to 7</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Diclofenac Sodium</td>
<td>50 mg q4h</td>
<td>150 mg</td>
<td>2-3</td>
<td>1-2</td>
<td>1</td>
<td>4-6</td>
</tr>
<tr>
<td>Diclofenac (can use 100 mg q6h loading dose)</td>
<td>150 mg</td>
<td>2-3</td>
<td>1-2</td>
<td>1</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>400 mg q6h or 200 mg q6h</td>
<td>1,200 mg</td>
<td>1-2</td>
<td>7-3</td>
<td>0.5</td>
<td>4-12</td>
</tr>
</tbody>
</table>

** Tp = Time to peak response
**POST-OPERATIVE OPIOIDS**

<table>
<thead>
<tr>
<th>Opioid</th>
<th>Recommended Dose</th>
<th>Morphine Equiv. Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine/Acetaminophen</td>
<td>30/300mg q6h</td>
<td>4.5 mg per dose</td>
</tr>
<tr>
<td>Hydrocodone/Acetaminophen</td>
<td>5mg/325mg q6h</td>
<td>5 mg per dose</td>
</tr>
<tr>
<td>Tramadol**</td>
<td>50mg q6h</td>
<td>5 mg per dose</td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th>Expected Pain</th>
<th>Mild to Moderate Pain (i.e. mild trauma / inflammation)</th>
<th>Moderate to Severe Pain (i.e. moderate trauma / inflammation)</th>
<th>Severe Pain (i.e. significant trauma / inflammation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ibuprofen 400-600 mg q6h or alternative NSAID&lt;sup&gt;5,6,7,11&lt;/sup&gt;</td>
<td>Ibuprofen 400-300 mg q6h or alternative NSAID&lt;sup&gt;5,6,7,11&lt;/sup&gt; and Acetaminophen 325-650 mg q6h&lt;sup&gt;7&lt;/sup&gt;</td>
<td>Ibuprofen 400-800 mg q6h or alternative NSAID&lt;sup&gt;5,6,7,11&lt;/sup&gt; and Acetaminophen 500-650 mg q6h&lt;sup&gt;7&lt;/sup&gt; and Hydrocodone/APAP 5/325 mg q6h or alternative opioid&lt;sup&gt;1,4,7,9&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>2 day supply - scheduled dosing interval</td>
<td>3 day supply - scheduled dosing interval</td>
<td>2-3 day PRN opioid supply with scheduled NSAID/APAP dosing interval</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; line therapy</td>
<td></td>
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<tr>
<td>If inadequate pain control</td>
<td>Take both NSAID and Acetaminophen</td>
<td>Add PRN Hydrocodone/APAP 5/325 mg q6h or alternative opioid&lt;sup&gt;1,4,7,9&lt;/sup&gt; (1 day supply)</td>
<td>For pain extending past 72 hours, use Ibuprofen 400-800 mg q6h prn&lt;sup&gt;7&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**NOTE:** Acetaminophen dosage from all sources should not exceed 3.000 mg daily if patient unmonitored / 4.000 mg if monitored.<sup>37</sup> Some NSAID & APAP dosage recommendations have been adjusted to accommodate what formulations are available at IHS facilities.
Appendix A: ADA Statement on the Use of Opioids in the Treatment of Dental Pain
Appendix B: Dental Specific Resources -- Acute Dental Pain Management
Appendix C: Benzodiazepines, Sedative-Hypnotics, and Anxiolytics
References
# Dental Pain Meds Selection Spreadsheet

Promotes safe and effective prescribing

- VERY SPECIFIC
- 7 pages
- Pedo Dosing Tab
- Interaction Meds Tab

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>ALL NSAIDs</strong></td>
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<tr>
<td>Dosing Adjustments: None for mild-moderate disease</td>
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<tr>
<td>Contraindicated: CHF, Cardiac Edema, Recent Acute MI, Unstable Angina, Perioperative period of Bypass Surgery</td>
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<tr>
<td>Avoid Concomitant Use: Increases toxicity due to potential renal dysfunction: Lithium, Digi, Methotrexate (high-dose)</td>
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<tr>
<td>Medications causing Nausea: Omeprazole, Symbio</td>
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<tr>
<td>Meds: Aspirin, NSAIDs (Rx 8 hrs prior to Aspirin and take Aspirin 2 hrs prior to NSAID Rx)</td>
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<tr>
<td>Avoid if: Creatinine Clearance (CrCl) &lt; 50 mL min</td>
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<tr>
<td>Avoid if: Estimated Glomerular Filtration Rate (eGFR) &lt; 30 mL min and concurrent disease (like diabetes)</td>
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<tr>
<td>Avoid if: Estimated Glomerular Filtration Rate (eGFR) 30 - 60 mL min and concurrent disease (like diabetes)</td>
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<tr>
<td>Avoid if: Estimated Glomerular Filtration Rate (eGFR) &gt; 60 mL min and concurrent disease (like diabetes)</td>
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<tr>
<td>Avoid if: Elevated Blood Pressure &amp; Edema (due to increased risk of blood clots)</td>
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<tr>
<td>GI: [avoid]: Ulcer bleeding, IBS, IBD</td>
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<td>GI [caution]: Gastric Bypass, Gastritis, Helicobacter Pylori, Peptic Ulcer Disease</td>
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<tr>
<td>GI [Precaution]: Increased risk of MI/Stroke, Increased Blood Pressure &amp; Edema</td>
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<tr>
<td>Bleeding Disorders: Intracranial Hemorrhage, Thrombocytopenia, Agranulocytosis, Aplastic Anemia, Congenital Defects, CV Bleeding, Hemorrhagic Diathesis,Incomplete Hemostasis</td>
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<tr>
<td>Alcohol: Consider Rx Proton Pump Inhibitor (PPI) because they have to bind to some receptors and can prevent the irreversible</td>
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<tr>
<td>Mild: Corticosteroids, Alcohol, Tobacco, SSRIs, SNRIs, Tricyclic antidepressants</td>
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<tr>
<td>Allergy: History of Aspirin, NSAID Allergy, NSAID-induced Asthma</td>
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<tr>
<td>Bleeding: Prolonged bleeding (less than Aspirin)</td>
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<td>Synergistic if combined with: Aceleminophen</td>
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<tr>
<td>Low risk of constipation and no centrally mediated vomiting or nausea, or respiratory suppression (like seen in opioids)</td>
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<tr>
<td>Must Rx PPI if prescribing NSAID to Gastric Bypass patient, Rx M &amp; M sized pills or liquid</td>
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<tr>
<td>Recommend taking with food to minimize GI adverse effects</td>
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<tr>
<td>PROPIONIC ACID NSAIDS</td>
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<tr>
<td>Ibuprofen</td>
<td>Y</td>
<td>Y</td>
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<td>200mg</td>
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<td>400mg</td>
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<td>800mg</td>
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<tr>
<td>Naproxen</td>
<td>Y</td>
<td>N</td>
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<td>[Base]</td>
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<td>500mg</td>
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<td>tabs (Naprosyn)</td>
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<tr>
<td>ALL OPIOIDS</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

**Avoid Concomitant Use:**
- *mixed agonist/antagonist opioids*
- *opioid antagonists*
- *CNS depressants*
- *Metoclopramide* (Reglan, Memovel)

**Addiction:**
- Opioid dependence

**Intoxication w/:**
- *alcohol*
- *centrally-acting analgesics*
- *hypnotics & psychotropics*
- *opioids*

**Significantly Increased Sedation:**
- *Cyclobenzaprine* (Amrix, Fexmid, Flexeril, Tabredol)

**Respiratory:**
- Caution w/ impaired ventilation *including:*
  - *Asthma*
  - *COPD*
  - *Emphysema*
  - *Bronchitis*
  - *Sleep Apnea*

**GI:**
- *Constipation*
- *Nausea*
- *Vomiting*

**CNS:**
- *CNS Depression*
- *Respiratory Depression*
- *Sedation*
- *Dizziness*

**FDA Warning:**
- Can interact w/ *antidepressants & migraine meds* to cause *Serotonin Syndrome* (Serotonin build up causing toxicity)

**CNS:**
- ↑ *intracranial pressure / head injury*

**Adrenal Impairment:**
- Can cause reduced Cortisol production if significant adrenal impairment present

**Misc:**
- *Not a good anti-inflammatory*
- *Do not significantly affect bleeding or platelet aggregation (But may interact w/ Warfarin)*
- *Nausea is centrally mediated and taking w/ food will not decrease nausea.*
- *Use caution in Sleep Apnea patients.*
<table>
<thead>
<tr>
<th>CL FORMULARY</th>
<th>OK for</th>
<th>Breast</th>
<th>Pregnancy</th>
<th>Maximum Dosing</th>
<th>Renal</th>
<th>Hepatic</th>
<th>Cardiac</th>
<th>Drug Interactions</th>
<th>Contra-Indications</th>
<th>Adverse Effects</th>
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<tr>
<td>PAIN MILDs</td>
<td>kids?</td>
<td>Feeding</td>
<td>OK?</td>
<td>QID</td>
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<td>OPIOIDS, cont.</td>
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**Codeine + Acetaminophen (30/300mg tabs)**

- **PATIENTS (12 yrs +):**
  - 15/300 mg (48-110 lbs)
  - 30/600 mg (110+ lbs)
  - QID

- **Dosage:** q 4 hr if necessary
- **Max daily dose:** (48-110 lbs) = 6 tabs (30/300 mg tabs)
- **Max daily dose:** (110+ lbs) = 12 tabs (30/300 mg tabs)

- **Onset:** 0.5-1 hrs.
- **Peak:** 1.5-2 hrs.
- **Duration:** 4-6 hrs.
- **t1/2:** 2-3 hrs.

- **Dosing adjustments based on Acetaminophen**

- **Dosing:**
  - If GFR < 10 mL/min/1.73m2, limit to TID

- **Hepatic Considerations:**
  - Severe renal impairment

- **Cardiac Considerations:**
  - Severe hepatic impairment/disease

- **Avoid Concomitant Use:**
  - Alcoholism

- **Avoid Concomitant Use:**
  - CYP2D6 inhibitors

- **CNs depression:**
  - CNS depression

- **Allergy:**
  - Metabolism

- **Alcoholism:**
  - Acetaminophen

- **GID:**
  - Abdominal pain

- **Contraindication:**
  - Morbid obesity

- **Pseudoadverse:**
  - Pseudoadverse

- **2017 FDA Warning:**
  - Contraindication: should not be used to treat pain in kids <12 yrs

**Hydrocodone + Acetaminophen (5/325mg tabs)**

- **Elders (≥65 yrs.) & Patients (48-110 lbs):**
  - 5/325 mg QID

- **Dosage:** q 4 hr if needed

- **Renal Impairment:**
  - Frequency Unknown

- **Cardiac AES:**
  - Bradycardia, Cardiac Arrest

- **Avoid Concomitant Use:**
  - Alcohol

- **Avoid Concomitant Use:**
  - CYP450 inhibitors

- **CNs depression:**
  - CNS depression

- **Allergy:**
  - Metabolism

- **Alcoholism:**
  - Constipation

- **GID:**
  - Abdominal pain

- **Contraindication:**
  - Morbid obesity

- **Pseudoadverse:**
  - Pseudoadverse

- **2017 FDA Warning:**
  - Contraindication: should not be used to treat pain in kids <12 yrs
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<th>Antiplatelets</th>
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<th>Antidepressants, Mood Stabilizers, &amp; Serotonin Affecting Meds</th>
<th>Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)</th>
<th>Serotonin Reuptake Inhibitors (SSRIs)</th>
<th>Serotonin Syndrome Causing Meds</th>
<th>Antipsychotics</th>
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This document is a bit of a monster for DOH to manage and keep updated. Therefore, this document is meant to be used as a template for what programs can develop locally and MUST be updated locally.

It should reflect medications on your formulary.
QUESTIONS?

There is also a PDF of today’s presentation that goes into more detail about strategies and references.