Implementing Best Practices for Opioid Prescribing for Acute Dental Pain

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July 30, 2019
Working with communities to address the opioid crisis.

- SAMHSA’s State Targeted Response Technical Assistance (STR-TA) grant created the Opioid Response Network to assist STR grantees, individuals and other organizations by providing the resources and technical assistance they need locally to address the opioid crisis.

- Technical assistance is available to support the evidence-based prevention, treatment, and recovery of opioid use disorders.

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Working with communities to address the opioid crisis.

✧ The Opioid Response Network (ORN) provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis.

✧ The ORN accepts requests for education and training.

✧ Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.
Contact the Opioid Response Network

✧ To ask questions or submit a request for technical assistance:

- Visit www.OpioidResponseNetwork.org
- Email orn@aaap.org
- Call 401-270-5900
Objectives

• Understand why opioids are bad medicine for acute pain, patients, and society
• Learn how to target inflammation to minimize acute pain after a procedure
• Be able to individualize prescribing based on the level of pain
• How to minimize opioid abuse related to analgesics prescribed for orofacial pain
Disclaimer: The drugs, doses and therapeutic recommendations discussed in this talk are based on the speaker's interpretation of the scientific literature and 30 years of clinical research on the management of acute pain and perioperative anxiety. Clinical application of this information requires knowledge of the information contained in the FDA labeling of the specific drugs, careful review of the individual patient's medical history and current medications, appropriate monitoring of the response to the drug(s) and doses administered, and skill in the prevention and management of adverse reactions that occur with all drugs with variable but finite prevalence.

Conflict of Interest Statement: The speaker is on the faculty of the ECU School of Dental Medicine and Brody School of Medicine, serves on the scientific advisory board of Charleston Laboratories and the GSK Global Pain Advisory Board and is a consultant to Rilento Pharmaceuticals. He is also on the editorial board of the Compendium, Applied Clinical Pharmacology and Toxicology, and Clinical Pharmacology and Translational Medicine.
Analgesic Prescribing in the Opioid Overdose Era
Opioids: Bad Medicine for Dental Pain, Patients and Society

- Current status of the opioid overdose crisis in the US
- Risk factors for opioid prescribing contributing to substance abuse
- Dental profession leadership in fighting substance abuse:
  - Opioid stewardship – avoid use of irrational analgesic combinations
  - Recognizing inherent vulnerability for substance abuse
  - Early prevention through patient education in the dental office
- Beware the potential consequences of inappropriate opioid prescribing
Table 2. Outcomes in the Opioid-Exposed and Opioid-Nonexposed Cohorts

<table>
<thead>
<tr>
<th>Outcome (N = 44,664)</th>
<th>Opioid-Exposed (n = 14,888)</th>
<th>Opioid-Nonexposed (n = 29,776)</th>
<th>P Value&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Adjusted Absolute Risk Difference, % (95% CI)&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid prescription at 90 to 365 d</td>
<td>1021 (6.9)</td>
<td>30 (0.1)</td>
<td>&lt;.001</td>
<td>6.8 (6.3 to 7.2)</td>
</tr>
<tr>
<td>&gt;1 Opioid prescription</td>
<td>387 (2.6)</td>
<td>3 (0.01)</td>
<td>&lt;.001</td>
<td>2.5 (2.2 to 2.7)</td>
</tr>
<tr>
<td>At least 1 diagnosis of opioid abuse in subsequent 365 d</td>
<td>866 (5.8)</td>
<td>115 (0.4)</td>
<td>&lt;.001</td>
<td>5.3 (5.0 to 5.7)</td>
</tr>
<tr>
<td>Site of encounter&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office visit</td>
<td>790 (5.3)</td>
<td>97 (0.3)</td>
<td>&lt;.001</td>
<td>4.9 (4.5 to 5.3)</td>
</tr>
<tr>
<td>Emergency department visit</td>
<td>25 (0.2)</td>
<td>24 (0.1)</td>
<td>.005</td>
<td>0.1 (0.02 to 0.2)</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>74 (0.5)</td>
<td>79 (0.3)</td>
<td>&lt;.001</td>
<td>0.2 (0.1 to 0.4)</td>
</tr>
<tr>
<td>Most common diagnoses of opioid abuse&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opioid type dependence, unspecified</td>
<td>602 (4.0)</td>
<td>66 (0.2)</td>
<td>&lt;.001</td>
<td>3.8 (3.5 to 4.1)</td>
</tr>
<tr>
<td>Poisoning by opium (alkaloids), unspecified</td>
<td>82 (0.6)</td>
<td>8 (0.03)</td>
<td>&lt;.001</td>
<td>0.5 (0.4 to 0.6)</td>
</tr>
<tr>
<td>Opioid abuse, unspecified</td>
<td>51 (0.3)</td>
<td>25 (0.08)</td>
<td>&lt;.001</td>
<td>0.3 (0.2 to 0.4)</td>
</tr>
<tr>
<td>Death</td>
<td>1 (0.007)</td>
<td>1 (0.003)</td>
<td>.62</td>
<td>0.003 (~0.002 to 0.005)</td>
</tr>
</tbody>
</table>

<sup>a</sup> P value obtained from χ² analysis.

<sup>b</sup> Adjusted for race/ethnicity and previous nonopioid substance abuse.

<sup>c</sup> Some patients had more than 1 site of encounter or diagnosis of opioid abuse.
Opioid Overdose Epidemic 2019

- Leveling off in national death rate but little sign of improvement in some parts of the country: 20% increase in opioid overdose deaths in NC
- Decreased life expectancy in US due to opioid overdoses
- Overall drug overdose mortality has grown exponentially over the past 40 years
  - Jalal et al. Science 2018
- Victims not just those who OD
- ‘Economic cost of the opioid crisis: $1 trillion and growing faster’
  - CNBC.com, 2/13/2018
- Drug rehabilitation 15 - 20% recovery
Opioid drug abuse often starts with an opioid prescription drug.
Substances* Contributing to Unintentional Medication, Drug, and Alcohol Poisoning Deaths
North Carolina Residents, 1999-2016

*These counts are not mutually exclusive. If the death involved multiple drugs it can be counted on multiple lines.

Medication or Drug Overdose Deaths by Intent
NC Residents, 1999-2016

440% increase in deaths since 1999
1,000+ deaths per year
Unintentional overdoses are driving this increase

Medication or drug overdose: X40-X44, X60-X64, Y10-Y14, X85.
Analysis by Injury Epidemiology and Surveillance Unit
Exponential increase in mortality rate due to substance abuse over 38 years

Jalal H et al, Science 361; 2018
With unprecedented availability of cheap heroin and fentanyl...

MORE PEOPLE ARE DYING

Opioid Potency

- Carfentanil: 10,000x
- Fentanyl: 100x
- Heroin: 2x
- Morphine: 1x
Percent of Opioid Overdoses Positive for Heroin, Fentanyl, and/or Fentanyl Analogue**
Office of Chief Medical Examiner Investigated Deaths, 2010-2017*

*2017 data are preliminary and subject to change
Source: NC Office of the Chief Medical Examiner (OCME) and the OCME Toxicology Laboratory, 2010-2017 Q4
**Fentanyl analogues include: Acetyl fentanyl, Butrylfentanyl, Furanylefentanyl, Fluorofentanyl, Acrlylfentanyl, Fluoroisobutrylfentanyl, Beta-Hydroxythiofentanyl, Carfentanil. The presence of a drug does not necessarily indicate that it was attributed to the cause of death.
Self-reported Lifetime Use of Substances among North Carolina High School Students

Almost **20%** of North Carolina High School Students reported using prescription drugs recreationally.

* Question not asked

Source: NC Department of Public Instruction, NC Youth Risk Behavioral Survey (YRBS), 2001-2017
Analysis: Injury Epidemiology and Surveillance Unit
Little Progress After A Century of Opioid Drug Research

**Milestones**

**Major Drug Classes**

- Placebo response
- Clinical trials methodology
- Opiate receptor
- Aspirin MOA
- Dental model
- Endogenous pain inhibitory system
- Gender, Genetics
- Imaging
- Pharmacogenomics
- Gene expression
- Proteomics
- Opioid OD epidemic
- PRO's Phenotyping
- Personalized medicine

**1950's**
- narcotics
- aspirin
- adjuncts

**1960's**
- opiates
- aspirin
- acetaminophen
- adjuncts

**1970's**
- opioids
- NSAIDs
- acetaminophen
- adjuncts

**1980's**
- opioids
- NSAIDs
- acetaminophen

**1990's**
- coxibs
- antidepressants
- anticonvulsants
- opioids
- NSAIDs
- acetaminophen

**2000's**
- NSAIDs
- opioids
- acetaminophen
- gabapentin

**beyond**
- NIH Director predicts non-addictive analgesic in 5 years

NEJM 1980 Letter: ‘**despite the widespread use of narcotic drugs in hospitals, the development of addiction is rare in medical patients with no history of addiction.**’

Cited in 608 times as evidence of safety

Washington Post June 2, 2017
Risk Factors Related to Opioid Prescribing: Wide Variability in Pain and Analgesia Across Patients

**Experimental Pain**

Variability in self-administered morphine dose for post-general surgery pain: 1 – 48 mg
mean dose = 13.3 mg

*Aubrun et al. Anesthesiology 2003; 98:1415*

**Clinical Pain (3rd Molar Extraction)**

Variability in self-administered morphine dose for post-general surgery pain: 1 – 48 mg
mean dose = 13.3 mg

*Kim H et al., Pain 2004*
Cumulative Dose-Response Curve Masks Individual Responses

A. Cumulative frequency distribution

B. Frequency distribution

ED<sub>50</sub>, LD<sub>1</sub>, LD<sub>50</sub>, ED<sub>99</sub>

Therapeutic Index: \[ \frac{ED_{50}}{100} = 4 \]
Conceptual Basis for Pain Variability at the Level of Individual Patients

Expect wide variation in practice among patients, their symptoms and response to meds
Opioids are not first-line or routine therapy for chronic pain

When opioids are needed for acute pain, prescribe no more than needed

Do not prescribe ER/LA opioids for acute pain

Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, 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 primary scope of this work is to ensure that all current and future clinical practice guidelines for opioid analgesic prescribing are sufficient…’

‘Dr. Gottleib said that…many common, acute indications could be treated with just a day or two of medication rather than a 30-day supply.’
Steps to Optimize Analgesia, Minimize Side Effects and Lower the Risk of Opioid Abuse
1. Target the Inflammatory Etiology of Acute Dental Pain

• **Nociceptive** - transient, protective/prevent further tissue damage

• **Inflammatory** – to protect the injured tissue

• **Neuropathic** – peripheral NS damage
  - Diabetic neuropathy
  - AIDS
  - Chemotherapy - induced peripheral neuropathy

• **Functional** – abnormal processing or function of CNS
  - Fibromyalgia
Inflammatory Pain

Blocked by NSAIDs

Minimizes

Resulting in Much Less

Produces Little or No

‘Slight’ Pain after LA offset, instead of

Activity in ascending pathways + spinal facilitation

Persistent activation/sensitization of Aδ/C.

Local release of active factors. (PG, BK, K)

Tissue Injury

Exaggerated output for given stimulus input

Ongoing pain + Hyperalgesia

Facilitation

PG, BK, K

Injury

Sensitization
Microdialysis Methods to Evaluate Relationship Between Acute Pain and COX-Mediated PGE$_2$ at the Surgical Site

Impacted Third Molars

PAIN
NSAIDs Produce Analgesia by Lowering PGE$_2$ Levels at the Site of Injury

NSAID administration after onset of inflammation and pain

* P < 0.01 vs. Placebo
NSAID Prior to Tissue Injury Suppresses COX

Time Post-Surgery (mins)

i.r. Prostaglandin E2 (pg/mL)

Placebo

Celecoxib

Ibuprofen

Khan AA et al.
Clin Pharmacol Ther. 2002
Acetaminophen COX-2 Inhibition

PGE₂ (pg/mL)

Time Post-Surgery (min)

- placebo
- acetaminophen
- rofecoxib
- ketorolac

* indicates statistically significant difference from placebo
Suppression of Both COX-1 and COX-2 To Optimize Efficacy
Toxicity of NSAIDs are Based on Their Selectivity For COX1 or COX2
Adverse effects – GI/Cardiovascular Toxicity
Adapted from:

J. Barden,¹ J. E. Edwards,² H. J. McQuay,³ P. J. Wiffen⁴ and R. A. Moore⁵

© British Dental Journal 2004; 197: 407–411

95% confidence interval of the NNT

- Didofenac 100 mg
- Ibuprofen 400 mg
- Diclofenac 50 mg
- Ibuprofen 200 mg
- Celecoxib 200 mg
- APAP 975/1000 mg
- APAP 600/650 + codeine 60 mg
- APAP 600/650 mg
- Aspirin 600/650 mg
- APAP 300 + codeine 30 mg
Little additive analgesic effect in combination with an NSAID
2. Prescribe Opioids Less Prone to Abuse

**Codeine**
- Usually combined with aspirin or acetaminophen due to weak analgesic activity
- Codeine converted to morphine by P450 isozyme CYP2D6
  - About 10% of codeine dose will be converted to morphine

**Oxycodone (Oxycontin)**
Deaths linked to opioid abusers after pills crushed and dissolved for IV administration
Combined with acetaminophen (Percocet)

**Hydrocodone**
Acetaminophen combination (Vicodin)
Ibuprofen combination (Vicoprofen)
Individual Variability in Drug Abuse is Heritable

The *addictions are moderately to highly heritable*, which is paradoxical because *these disorders require use*; a choice that is itself modulated by both genes and environment. *The addictions are interrelated and related to other psychiatric diseases by common neurobiological pathways*, including those that modulate reward, behavioral control and the anxiety or stress response.

Goldman D et al. Nature Reviews/Genetics 2005

**Outcome from Short Course of Opioid Abuse Associated with Heritability**
Mood Alteration and Reward Properties of Opioids

- Overlapping neural systems for analgesia, physical dependence and opioid reinforcement
- Increased DA release is powerfully rewarding
- Opiates increase DA release in the Nac
- MOR are present post-synaptically on GABAergic neurons
- Reinforcing properties of opioids mediated through inhibition of local GABAergic neuronal activity

‘the dark side of pleasure is addiction’
‘brain imaging shows that heroin, orgasm and fatty foods all activate the same pleasure circuits’
How Can We Minimize Opioid Abuse Related to Analgesics Prescribed for Orofacial Pain?

~ 10 billion dosage units dispensed annually make opioids among the most frequently prescribed medications in US

Opioids prescribed for therapeutic purposes may also result in:

**Diversion** – excess pills are given (diverted) to family members, friends, or sold on the streets.

**Dependence** – may be **physical** (body responds negatively when the drug is discontinued following chronic use) or **psychological** (loss of ability to make sound decisions about what is right or wrong related to their drug use)

**Addiction** – physical and psychological dependence characterized by **neurochemical and molecular changes in the brain**

**Death due to overdose**

3. Minimize Diversion

Most commonly prescribed opioid amount is 20 doses and a 3-day supply.

What Happens to These Drugs?
- Used in totality as prescribed
- Stored “for a rainy day”
- Sold on the street
- Given to friends/family

< Half of opioids prescribed for pain after oral surgery were used, only 5 patients used all of the prescribed pills (N=28) Maughan BC et al. Drug and Alcohol Dependence 2016

Extrapolates into millions of pills available for diversion after dental procedures
4. Prescribe Analgesics Based on Scientific Evidence not Tradition

Established prescribing behaviors
- Efficacy of APAP-opioids established in 1970’s, before NSAIDs introduced
- Improved clinical analgesic research (Cooper & Beaver 1976)
- NSAIDs efficacy and safety >> opioid combinations

Misperception of DEA Scheduling of Opioids
- Schedule 2 drugs have greater abuse potential, not efficacy

Placebo response contribution to analgesic efficacy
- Placebo response is 30-40% for simple extractions
- Misperception that Rx analgesics are more potent than OTC analgesics

Prescribing for Most Severe Outcome
- Often prescribe to manage the worse case scenario
- May benefit 20% with worse pain, but not needed for the other 80%

Unfounded Expectations of APAP Efficacy
- Maximum dose reduced from 1000 mg to 650 mg

Patient Expectations and Demands
- Not providing an opioid can be perceived as less than optimal treatment
- Need to educate patients that NOT providing an opioid is the best treatment
5. Recognize that Pain Relief ~ Abuse Potential for Most Opioids

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Response</th>
<th>Abuse Liability</th>
<th>Maximal Pain Relief</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strong Opioid Agonists</strong></td>
<td></td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Morphine, meperidine, fentanyl,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>alfentanil, hydromorphone, levorphanol,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>methadone, oxymorphone, remifentanil,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sufentanil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moderate to Strong Agonists</strong></td>
<td></td>
<td>Moderate</td>
<td>Low to Moderate</td>
</tr>
<tr>
<td>Codeine, hydrocodone, oxycodone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Agonist/ Antagonists</strong></td>
<td></td>
<td>Low</td>
<td>Moderate to High</td>
</tr>
<tr>
<td>Buprenorphine, butorphanol, nalbuphine,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pentazocine</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mu Opioid Receptors: Combined Analgesia and Toxicity

- Respiratory depression
- Sedation
- Physical dependence
- Constipation
- Miosis

Table 4. Acute adverse events observed in children for medications or medication combinations.18

<table>
<thead>
<tr>
<th>MEDICATION OR MEDICATION COMBINATION, DOSE</th>
<th>STUDIES, NO.</th>
<th>ACUTE ADVERSE EVENTS REPORTED, NO.</th>
<th>STUDY PARTICIPANTS, NO.</th>
<th>ACUTE ADVERSE EVENTS, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine, 2 milligrams/kilograms</td>
<td>1</td>
<td>74</td>
<td>56</td>
<td>132</td>
</tr>
<tr>
<td>Oxycodone, 0.2 mg/kg</td>
<td>2</td>
<td>69</td>
<td>73</td>
<td>95</td>
</tr>
<tr>
<td>Morphine, 0.5 mg/kg</td>
<td>2</td>
<td>84</td>
<td>140</td>
<td>60</td>
</tr>
<tr>
<td>Ibuprofen, 10 mg/kg, and Oxycodone, 0.1 mg/kg</td>
<td>1</td>
<td>8</td>
<td>22</td>
<td>36</td>
</tr>
<tr>
<td>Acetaminophen Plus Codeine, 1 mg/kg</td>
<td>3</td>
<td>94</td>
<td>368</td>
<td>26</td>
</tr>
<tr>
<td>Ibuprofen, 10 mg/kg, and Codeine, 1 mg/kg</td>
<td>2</td>
<td>52</td>
<td>209</td>
<td>25</td>
</tr>
<tr>
<td>Ibuprofen, 10 mg/kg</td>
<td>9</td>
<td>74</td>
<td>510</td>
<td>15</td>
</tr>
<tr>
<td>Naproxen, 20 mg/kg</td>
<td>1</td>
<td>4</td>
<td>41</td>
<td>10</td>
</tr>
<tr>
<td>Ketoprofen, 40 mg</td>
<td>1</td>
<td>2</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>Tramadol, 2 mg/kg</td>
<td>1</td>
<td>3</td>
<td>67</td>
<td>4</td>
</tr>
<tr>
<td>Acetaminophen, 15 mg/kg</td>
<td>6</td>
<td>10</td>
<td>260</td>
<td>4</td>
</tr>
</tbody>
</table>
6. Consider Atypical Centrally-Acting Analgesics if an Opioid in Indicated

**Tramadol (Ultram®)**

- Moderate-strong analgesic
- Agonist at mu receptors and blocks uptake of NE and 5-HT so spinal pain processing is less efficient
- **Minimal potential for dependence or abuse**
- **Minimal potential for respiratory depression**
- Effects partially blocked by naloxone
- Metabolized by CYPs (CYP2D6 and others) to 5 different metabolites
  - Desmethyltramadol is 200 times more potent
  - Depending on genetics analgesic effects can either increase or decrease

FDA states that tramadol is contraindicated < 12 years of age for pain
Can be prescribed over the phone or electronically per CVS
Not listed in STOP Act provisions to limit opioids misuse
7. Recognize that Naloxone (Narcan) for Opioid Reversal Does not Treat Substance Abuse

Antagonist at mu and kappa receptors
Emergency Department Opioid Overdose Visits & EMS Naloxone Administration, 2011-2016†

EMS administered Naloxone more than 13,000 times in 2016

*ICD9 to ICD10 coding changed in October 2015. Impact on surveillance is unclear. Naloxone administration alone by EMS does not necessarily equate to an opioid overdose.

Source: NC DETECT (statewide ED data), N.C. Division of Public Health and UNC Carolina Center for Health Informatics (CCHI); EMSpic- UNC Emergency Medicine Department, N.C. Office of Emergency Medical Services (OEMS), 2011-2016.
8. Use the PAIN Management Paradigm

- **P = Prevention**
- **A = Anti-inflammatory**
  - Acetaminophen
  - Anesthetics
- **I = Individualize**
- **N = Narcotics (opioids)**

A milligram of prevention is better than a pound of rehabilitation
Therapeutic Strategies

Long-acting Local Anesthetic

Nociceptive Input

Pain Onset

1 2 3 n

Moderate Pain

24 48

Sensitization

Inflammatory Response

Pre- or Post-op Anti-inflammatory

+ / - Opioid
9. Use Acetaminophen for Additive Analgesia

- Inhibits Prostaglandin Hydroperoxidase
- Metabolites of acetaminophen act on TRPA1-receptors in the spinal cord to suppress the signal transduction from the superficial layers of the dorsal horn, to alleviate pain.
- One metabolite (AM-404) inhibits Na channels and the reuptake of endogenous cannabinoids.
Additive Preemptive Analgesia for NSAID and Long-Acting Local Anesthetic

Dionne et al. 1984
Preventive Effects of Postop Pain Control

Immediate Postop. Pain

Pain at 48 Hours

* P < 0.001 Bupivacaine drug effect, 2-ANOVA

* P < 0.05 Bupivacaine drug effect, 2-ANOVA

Gordon SM et al. 2002
Dual COX-1/COX-2 Suppression Prevents Central Sensitization

**Pain Postoperatively**

- **Sum VAS (1 - 4 Hr.)**
  - PLBO: 150
  - RCOX: 100
  - IBU: 70

**Pain at 24 and 48 hr**

- **Pain (100 mm VAS)**
  - PLBO: 40
  - RCOX: 30
  - IBU: 20
10. Individualize Prescribing for Acute Pain to Minimize Opioid Misuse or Abuse Based on Procedure, Pain Level and Validated Drugs and Combos

**Mild Pain**
OTC ibuprofen, naproxen or ketoprofen as needed

**Moderate Pain**
Ibuprofen 400-600 mg every 4-6 hours by the clock for first 48-72 hours, not to exceed maximum recommended daily dose. As needed until pain subsides

Moderately Severe Pain
Prescription dose of NSAID administered prior to the procedure or immediately afterwards

Administration of long-acting local anesthetic 0.5% bupivacaine with epinephrine for procedural anesthesia and postoperative analgesia

Postoperative administration of prescription dose of NSAID administered by the clock for 48-72 hours combined with administration of acetaminophen 600/650 mg by the clock; the two medications can be given concurrently or alternated to maintain blood levels of both medications

Severe Pain
Provide a prescription of an opioid drug in combination with acetaminophen to be filled and administered only if needed for pain not relieved by regimen for Moderately Severe pain.

Example: 2 tablets of 325 mg acetaminophen plus 37.5 mg tramadol (Ultracet) every 4-6 hours for pain, not to exceed 8 tablets every 24 hours

NB: Separate dosing of 600/650 mg acetaminophen needs to be discontinued
## Comparison of Conventional Approach to Targeted Strategies

<table>
<thead>
<tr>
<th></th>
<th>Opioid Combinations</th>
<th>Preventive/Additive/Adaptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesia</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Adverse Effects</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Abuse Potential</td>
<td>+++</td>
<td>0 (without opioid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ (with tramadol)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>++ (with oxycodone or hydrocodone)</td>
</tr>
<tr>
<td>Overdose Risk</td>
<td>++</td>
<td>0 (without opioid)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ (with tramadol)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>++ (with oxycodone or hydrocodone)</td>
</tr>
</tbody>
</table>

Relative effects based on well-established pharmacology of drug classes and specific agents in Table 1

How to identify drug seeking behavior?

- Drug being requested: opioids, benzodiazepines, methylphenidate, dexamphetamine, anabolic steroids, antipsychotic drugs
- Asking for a specific drug by name or brand name
- Claiming allergy to alternative drugs
- Doctor shopping
- Anger when questioned about symptoms such as pain
- Unscheduled clinic visits for refills
- Unauthorized dose escalation
- Claiming to be unable to afford dental work needed to manage dental pain
- Multiple visits for the same complaint
- More concerned about the drug than medical/dental problem
Example of Successful Intervention Effort to Minimize Problematic Clinical Practice
‘Approximately 31% of the opioids prescribed for all age groups were associated with nonsurgical dental visits… suggests there might be opportunities to reduce opioid prescribing by targeting nonsurgical dental visit prescribing practices.’
### Table 1: Prescribing Options for Acute Pain to Minimize Opioid Misuse or Abuse

<table>
<thead>
<tr>
<th>Pain Level</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild Pain</strong></td>
<td>OTC ibuprofen, naproxen or ketoprofen as needed.</td>
</tr>
<tr>
<td><strong>Mild to Moderate Pain</strong></td>
<td>Ibuprofen 400-600 mg every 4-6 hours by the clock for first 48-72 hours, not to exceed maximum recommended daily dose. As needed until pain subsides.</td>
</tr>
<tr>
<td><strong>Moderately Severe Pain</strong></td>
<td>Prescription dose of NSAID administered prior to the procedure or immediately afterwards. Administration of long-acting local anesthetic 0.5% bupivacaine with epinephrine for procedural anesthesia and postoperative analgesia.</td>
</tr>
</tbody>
</table>

**Alternative,** if the above recommendation does not relieve pain sufficiently: Postoperative administration of prescription dose of NSAID administered by the clock for 48-72 hours combined with administration of acetaminophen 600/650 mg by the clock; the two medications can be given concurrently or alternated to maintain blood levels of both medications.

**Severe Pain**
Provide a prescription of an opioid drug in combination with acetaminophen to be filled and administered only if needed for pain not relieved by regimen for moderately severe pain.

Example: 2 tablets of 325 mg acetaminophen plus 37.5 mg tramadol (Ultracet) every 4-6 hours for pain, not to exceed 8 tablets every 24 hours.

**NB:** Separate dosing of 600/650 mg acetaminophen needs to be discontinued.


### Table 2: Comparison of Conventional Approach to Targeted Strategies

<table>
<thead>
<tr>
<th>Analgesia</th>
<th>Opioid Combinations</th>
<th>Preventive/Additive/Adaptive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesia</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Adverse Effects</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Abuse Potential</td>
<td>+++</td>
<td>0 (without opioid) + (with tramadol) + (with oxycodone or hydrocodone)</td>
</tr>
<tr>
<td>Overdose Risk</td>
<td>++</td>
<td>0 (without opioid) + (with tramadol) + (with oxycodone or hydrocodone)</td>
</tr>
</tbody>
</table>

Relative effects based on well-established pharmacology of drug classes and specific agents in Table 1 ranked on a 0 to +++ ranking.

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Modified from Checklist for Prescribing Opioids for Chronic Pain, Centers for Disease Control, US Department of Health and Human Services, www.cdc.gov/drugoverdose/prescribing/guidelines
Determinants of Safe, Effective, and Patient-Centered Therapeutics

Therapeutic Efficacy

Clinical Judgment

Monitoring

Training & Experience

Adverse Drug Reactions

Patient Risk Factors

Drug-Drug Interactions

Inter-Individual Variability

Dose, Route & Rate of Administration

Pharmacologic Properties of Drugs

Patient Safety & Needs


Questions