

Safe Opioid Prescribing in the Management of Acute Dental Pain

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Objectives

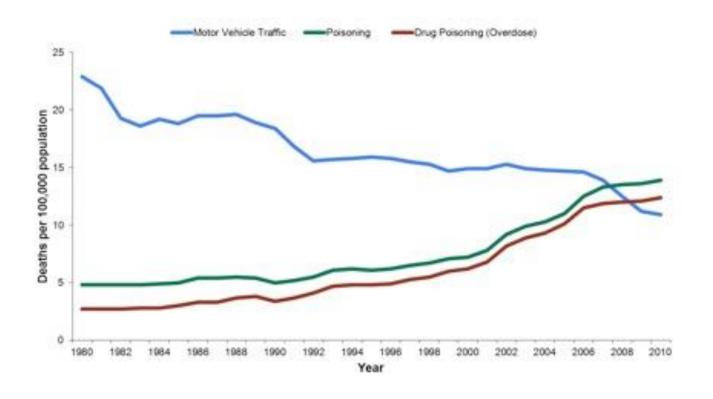
- Describe the epidemiology of prescription opioid use and overdose
- Explain the importance of the prescription drug monitoring program as a tool to inform clinical decision making in the treatment of acute pain
- Discuss pharmacotherapy used in the treatment of acute dental pain including prescription opioids and non-opioid medications

Scope of Prescription Opioid Use

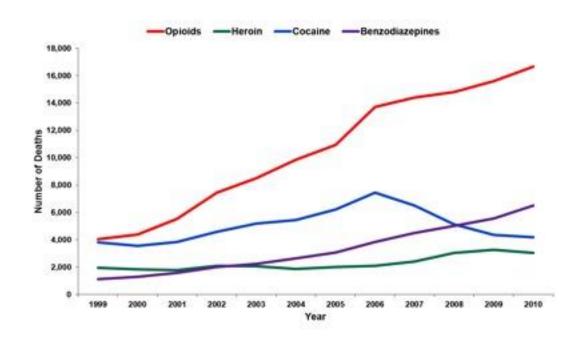
- Prescription opioids have increased significantly in past two decades
 - 75.5 million in 1991 to 259 million in 2012
- US health professionals dispensed enough opioid medications for every American
 - Equivalent hydrocodone 5mg 6X/day for 1 month
- Despite serious risks associated with opioid use
 - Prescribed frequently
 - Excessive quantities

Prescription Drug Abuse—A Research Update from the National Institute on Drug Abuse. National Institute of Health, 2011 December 2011. Report No. 2.

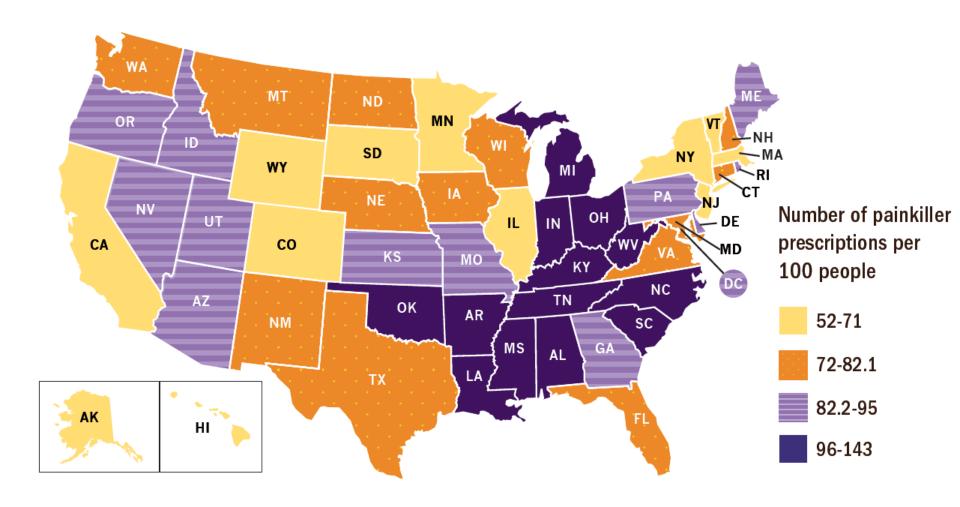
Motor vehicle traffic, poisoning and drug poisoning (overdose) death rates United States, 1980-2010



Drug overdose deaths by major drug type, United States, 1999-2010



Pain Prescription Patterns by State



Prescribing Patterns - Study

- Maine Medication Take Back Study
 - Conducted 2011-2013
 - Medications collected and data entered into computer monitoring system
 - Therapeutic class, controlled substance category and medication percent waste

Prescribing Patterns – Study

Results

- 13,599 individual medications returned from 1,049 participants
- 553,019 units cataloged 76% medication waste
 - Capsules, tablets, milliliters, patches or grams)
- Medication returns
 - Non-controlled prescription medications 56.4%
 - OTC 31.4%
 - Controlled prescription medications 9.1%

Medication returns by number of units and percent waste for each controlled substance category

Controlled Substance Classification ¹	Original Units ²	Returned Units ³	Waste (%) ⁴
Schedule III APAP & Hydrocodone	14380	10679	74.3
Schedule II Opioid (Oxycodone)	12057	8379	69.5
Schedule IV Benzodiazepam	9776	7824	80
Schedule V Opioid (Codeine)	4310	2826	65.6
Schedule II Opioid (Morphine)	3623	2742	75.7
Schedule V Other*	3059	2520	82.4
Schedule II APAP & Oxycodone	2766	2317	83.8
Schedule III APAP & Codeine	3277	2285	69.7
Schedule II Stimulant (Methamphetamine)	3007	2196	73
Schedule IV APAP & Propoxyphene	2637	2174	82.4
Schedule IV Sedative/Hypnotic	1623	1523	93.8
Schedule II Opioid (Hydromorphone)	1721	1188	69
Schedule III Other**	1789	1118	62.5
Schedule IV Other***	1319	944	71.6
Schedule II Stimulant (Amphetamine)	833	667	80.1
Schedule II Opioid (Methadone)	522	419	80.3
Schedule II Opioid (Fentanyl)	414	328	79.2
Schedule III Cannabinoid	490	205	41.8
Schedule III Opioid	155	117	75.2
Schedule II Opioid (Meperidine)	120	61	50.8
Schedule II Opioid (Codeine)	130	37	28.5
Schedule II Barbiturate	3	3	100
Total Controlled Substance Units	68011	50549	74.3

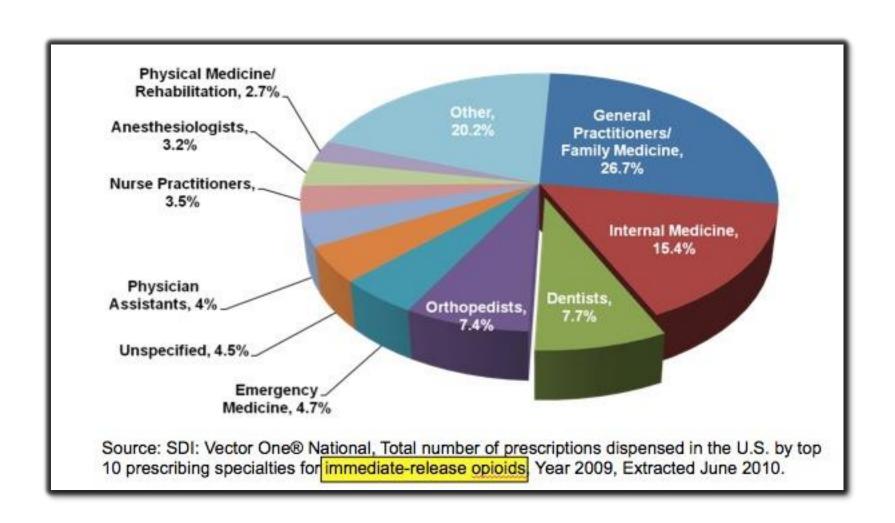
- 1. Controlled substance schedule is based upon the Controlled Substance Act of 1974.
- 2. Original units (capsules, tablets, milliliters, patches, or grams) are obtained from the returned bottle label (prescription or over-the-counter).
- 3. Returned units are based on manual counting.
- 4. Percent waste is calculated by units returned divided by original units dispensed. Percent waste is $\pm 16.2\%$ due to some missing original units.

 Am J Public Health. 2015;105(1):e65-e71.

Prescribing Challenges

- Essential to ensure these medications are being prescribed
 - Appropriate
 - Necessary
 - Reasonable quantities

Opioid Prescriptions by Healthcare Provider



Monitoring Use of Opioid Medications

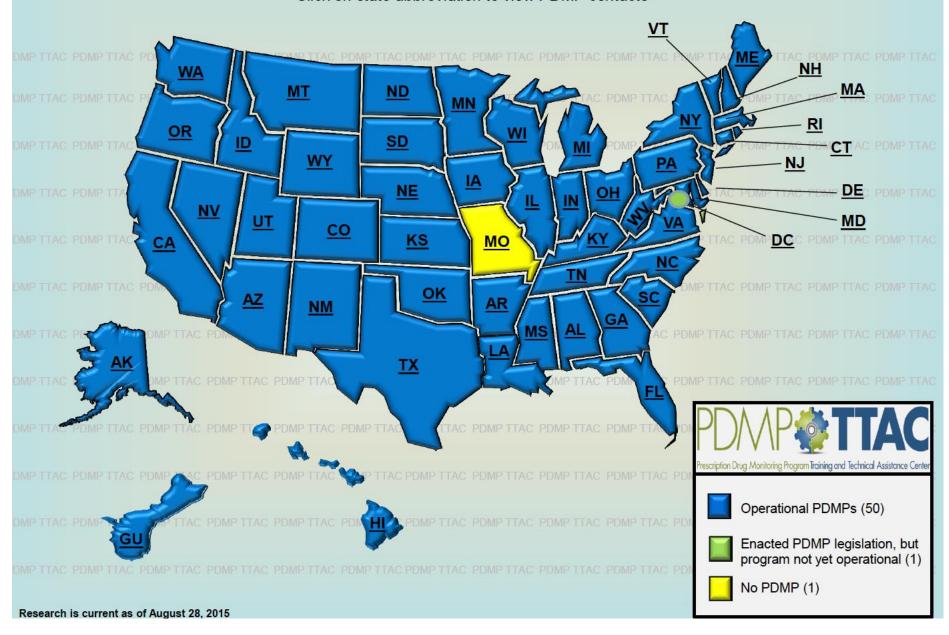
- Prescription Drug Monitoring Program (PDMP)
 - Standard tool to provide better patient care
 - State electronic database that collects information on dispensed controlled prescription medications by pharmacies
 - Actively managed to send alerts to prescribers when problems are identified

PDMP Health Care Goals

- Allow prescribers and dispensers to have more information at their disposal for making decisions
- Ensure patients with pain are safely and effectively treated
- Reduce misuse, abuse, overdoses and diversion of opioids and other controlled prescription drugs

Status of Prescription Drug Monitoring Programs (PDMPs)

* Click on state abbreviation to view PDMP contacts *



Data Collected from PDMP – Types of Controlled Prescriptions

- Schedule II
 - High abuse potential and severe dependence liability
 - Morphine, codeine, hydromorphone, oxycodone, hydrocodone
- Schedule III
 - Moderate dependence liability
 - Codeine, codeine w/acetaminophen
- Schedule IV
 - Alprazolam, diazepam, lorazepam, tramadol, Ambien®
- Schedule V
 - Lowest abuse potential and dependence liability
 - Robitussin-AC®

Data Collected from PDMPs – Additional Information

- Patient name
- Prescriber name and title
- Name of person who dispensed medication
- Medication name, strength and quantity
- Medication directions
- Number of refills
- Method of payment
- Date for each prescription dispensed

PDMP Database

- Data provided real time from pharmacies
 - Daily vs. weekly
- Available online for free
- Patient and prescriber history reports are available
- Automatic reports routinely sent to prescribers
 - Informs prescribers when a patient has reached a prescription threshold
 - Considered to be potentially dangerous or needs further monitoring

Types of Threshold Reports

- Acetaminophen
 - Average daily dose ≥ 4 grams w/in 90 days
- Pharmacy/Prescriber
- Multiple Opioid Prescriptions
- Morphine Milligram Equivalent

How does PDMP work?

- NOT public information
 - Regulatory boards, state Medicaid and public health agencies, Medical Examiners and law enforcement
- Patient confidentiality applies to all reports
 - Penalties for misuse
- Access to the PDMP is underutilized by prescribers and pharmacists

PDMP Database Access

- Licensed prescribers
 - Automatically enrolled into PDMP system
 - Use the PDMP system before prescribing scheduled medications
- Licensed dispensers
 - Pharmacist complete form to access PDMP system
- Authorized person
 - Access PDMP system on behalf of licensed prescriber
 - Person w/in medical office or practice

PDMP Effectiveness



2012 Action:

New York required prescribers to check the state's prescription drug monitoring program before prescribing painkillers.

2013 Result:

Saw a 75% **drop in patients** who were seeing **multiple prescribers** to obtain the same drugs, which would put them at higher risk of overdose.



2010 Action:

Florida regulated pain clinics and stopped health care providers from dispensing prescription painkillers from their offices.

2012 Result:

Saw more than 50% decrease in overdose deaths from oxycodone.



2012 Action:

Tennessee required prescribers to check the state's prescription drug monitoring program before prescribing painkillers.

2013 Result:

Saw a 36% **drop in patients** who were seeing **multiple prescribers** to obtain the same drugs, which would put them at higher risk of overdose.

Impact of a Mandatory PDMP on Prescription Opioid Analgesics by Dentists

- Opioid prescriptions urgent care dental clinic
 - Frequency and quantity of opioid

- Collected patient records
 - A 3-month period before PDMP
 - 2 consecutive 3-month periods after mandatory
 PDMP implementation

Impact of a Mandatory PDMP on Prescription Opioid Analgesics by Dentists

Results

- Patients prescribed pain medications
 - 452 (30.6%), 190 (14.1%), and 140 (9.6%) received opioid Rx
 - Statistically significant reduction in # opioid Rx after implementation of PDMP (p<0.05)
- Total # opioid pills decreased from 5096 to 1120 − ↓ 78%
- Non-opioid analgesic Rx (acetaminophen) increased during study periods (p<0.05)

Conclusion

- Mandatory PDMP significantly affects Rx pattern for pain medications by dentists
- Shift towards evidence-based prescription practices

Using PDMP - Positives

- Accessible anytime, immediate
- Provides important data, allows for overall picture of patient prescription use
- Prevents from contributing to over use of medications and potential overdose/addictions
- Multiple states feature is useful
 - PDMP Interconnect
- Great resource to practice
- More information to make informed decision

Using PDMP - Negatives

- Cumbersome registration
- Takes to much time to access and obtain results
- Need more education to use
- Connect w/other healthcare systems
 - Veterans Health Administration

Acute Dental Pain Management

- Mild moderate severe
- Medications to treat moderate to severe pain
 - Hydrocodone, oxycodone (C-II), codeine (C-III)
 - Acetaminophen
 - NSAIDS (Ibuprofen, Naproxen, Celecoxib)

Acute Dental Pain Management – Empirical Experience

- Opioid analgesics
 - Hydrocodone 5mg + Apap 325mg
 - Hydrocodone 7.5mg + Apap 325mg (ES products)
 - Most frequently prescribed analgesics following dental procedures
 - Surgical extractions and third molar removals
 - 1-2 tablets q4-6h prn pain #20 (24-48 hr supply)
 - Lack of evidence supporting as the 1st choice medication for acute pain management
- Considered to be stronger and more potent when prescribing for acute pain

Opioid Safety and Risks

Allergies Rare

Adverse Effects Overdose Common At high doses (ER/LA) Nausea, sedation, formulations contain constipation, urinary more opioid than retention, sweating IR/SA and increase overdose risk **Pruritus** When combined with (histamine release) other sedatives Drug-disease Respiratory depression, sleep Interaction: sleep apnea apnea

Pain Physician. 2008; 11:s105-120. J Gen Intern Med. 2010; 10(25):310-315.

Specific Opioid Risk in the Elderly

- Respiratory depression
 - Sedation occurs before significant depression; warning sign
 - Patients should be counseled not to increase dose to get better pain control, especially at night when respiratory rate normally decreases
- Drug-drug interactions
- Drug-disease interactions
 - CHF, COPD, sleep apnea, chronic liver and renal disease
 - Dementia
 - Age related adverse effects
- Fall risk

Prior to Prescribing Opioids

- Check state PDMP
- Talk to other providers if you have concerns
- Assess prescription risk for misuse
 - Tobacco, alcohol, illicit drugs, prescription drug misuse
- Prescribe minimum amount of opioids
 - If pain is more severe or lasts longer reassess patient before prescribing more medication
- Give specific opioid directions (e.g. no more than 3 tablets/day)
- Explain safe use and storage of medication
- Talk to patients about proper disposal of unused medications

Comparative Efficacy of Medications for Acute Pain

- Most post-procedure dental pain includes an inflammatory component
- NSAIDS are rational first-line medications and can be more effective than opioids
- Mild to moderate pain can be managed by non-opioids
 - Ibuprofen 400-800 mg
 - APAP 1000 mg
 - Combination of Ibuprofen + APAP

Comparative Efficacy of Medications for Acute Pain

- Numerous randomized clinical trials have established NSAIDS provide better pain control
 - Ibuprofen alone or in combination with APAP superior to oxycodone alone or in combination with APAP
- Systematic review/meta analysis
 - Ibuprofen, either alone or in combination with acetaminophen, is more effective than commonly prescribed opioid analgesics in controlling postsurgical and acute dental pain

Stepwise guidelines for acute postoperative pain management in dentistry.

PAIN SEVERITY	ANALGESIC RECOMMENDATION*
Mild	Ibuprofen (200-400 milligrams) q [†] 4-6 hours: prn [‡] for pain
Mild to Moderate	Ibuprofen (400-600 mg) q 6 hours: fixed interval for 24 hours Then ibuprofen (400 mg) q 4-6 hours: prn for pain
Moderate to Severe	Ibuprofen (400-600 mg) with APAP (500 mg) q 6 hours: fixed interval for 24 hours Then ibuprofen (400 mg) with APAP (500 mg) q 6 hours: prn for pain
Severe	Ibuprofen (400-600) with APAP (650 mg) with hydrocodone (10 mg) q 6 hours: fixed interval for 24-48 hours Then ibuprofen (400-600 mg) with APAP (500 mg) q 6 hours: prn for pain

* Additional considerations:

- Patients should be warned to avoid acetaminophen, or *N*-acetyl-*p*-aminophenol (APAP), in other medications. Maximum daily dose of APAP is 3,000 mg per day. To avoid potential APAP toxicity, a dentist should consider prescribing an opioid rescue medication containing ibuprofen.
- Maximum dose of ibuprofen is 2,400 mg per day. Higher maximal daily doses have been reported for osteoarthritis when under the direction of a physician.
- A decrease in postoperative pain severity has been demonstrated when a nonsteroidal antiinflammatory drug is administered pre-emptively.⁸²
- Long-acting local anesthetics can delay onset and severity of postoperative pain. 79,80
- A perioperative corticosteroid (dexamethasone) may limit swelling and decrease postoperative discomfort after third-molar extractions.⁸¹⁻⁸³
- † q: Every.
- ‡ prn: As needed.

Navigating the Choices



	Acetaminophen (APAP) - Tylenol®
Mechanism/T herapeutics:	 May inhibit synthesis of prostaglandins (PG) in CNS and may block pain impulse generation peripherally No peripheral anti-inflammatory effects; no effect on platelets Antipyretic and Analgesic properties
Dose forms:	 Tabs (325 mg, 500 mg, 650 mg); Suppository (120 mg, 325 mg, 650 mg); Suspension (160 mg/5 mL); **(80/0.8 mL discontinued)**; Chewable/Meltaway® tabs 80 mg, 160 mg; IV 10 mg/mL (Ofirmev®)
Dosing:	 OTC: 650 mg PO q4-6h (3,250 mg) or 1,000 mg PO q6h (3,000 mg) Extended release: 1,300 mg PO q8h (3,900 mg) Children 10–15 mg/kg/dose PO q4-6h; NTE 5 doses or 4,000 mg in 24 hr
Adverse effects:	 Generally well tolerated Skin reactions; rare but serious, potentially fatal, e.g., Stevens Johnson Syndrome (SJS), Toxic Epidermal Necrolysis (TEN), and acute generalized exanthematous pustulosis (AGEP)
Select Drug Intxns:	APAP may ↑ INR (warfarin) when new use > 2,000 mg/day; monitor
Safety:	 Hepatotoxicity (NTE 4,000 mg daily); less in patients with alcoholic liver disease; > 3 drinks/day may ↑ risk (suggest < 2,000 mg APAP/24 h)

Acetaminophen



325 mg tablet



650 mg ER caplet

160 mg/5 mL suspension



500 mg caplet



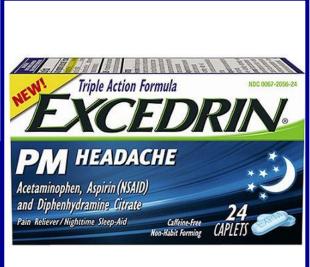
OTC APAP and Diphenhydramine



Acetaminophen 500 mg
Diphenhydramine 25 mg

Acetaminophen 500 mg Diphenhydramine 50 mg





Acetaminophen 250 mg
Aspirin 250 mg
Diphenhydramine 38 mg

Acetylsalicylic acid, Aspirin (ASA) - Bayer®, Ecotrin®

Mechanism/ Therapeutics:	 Irreversibly inhibits COX-1 and 2 enzymes;
Dose forms:	• Tabs (81 mg, 325 mg, 500 mg, 650 mg); Supp. (300 mg, 600 mg)
Dosing:	 325 – 650 mg PO q4-6h; max 4,000 mg/day Caution - children/teenagers: Reye's syndrome potential if recovering from chicken-pox or flu-like symptoms
Adverse effects:	 Upper GI bleeding/irritation; hyperuricemia ↑ risk of salicylate sensitivity - bronchospasm (if sensitive to tartrazine dyes, h/o nasal polyps and asthma)
Select Drug Intxns:	 Caution with anticoagulants, antiplatelets, corticosteroids (PO/IV), SSRIs, bisphosphonates
Safety:	 Platelet, bleeding disorders; increased GI risks if > 3 alcoholic drinks/day; PUD or erosive gastritis; severe hepatic and renal failure Avoid 1-2 weeks prior to surgery (except cardiac stent patients who are completing their dual antiplatelet therapy) Elderly; avoid chronic use >325 mg/day

Examples of OTC salicylates







81 mg

Acetylsalicylic acid (Aspirin)









Magnesium salicylate 580 mg



Aspirin OTC Combination Products



Aspirin 500 mgDiphenhydramine 38.3 mg

Acetaminophen 250 mg
Aspirin 250 mg
Caffeine 65 mg





Aspirin 400 mg Caffeine 32 mg

Alka-Seltzer® Product Line Extension

Each tablet contains:

Aspirin 325 mg, Citric Acid 1000 mg, Sodium Bicarbonate 1,916 mg



Each tablet contains:

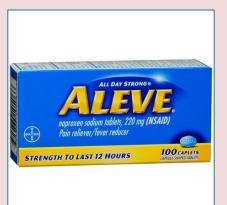
Citric Acid 1000 mg, Sodium Bicarbonate 1,940 mg

No aspirin

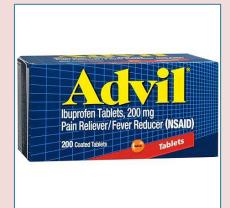


Ibuprofen (NSAID) – <i>Motrin®, Advil®</i>	
Mechanism/ Therapeutics:	 Reversibly inhibits COX-1 and COX-2 enzymes, leading to ♥ PG precursor formation Antipyretic, Analgesic and Anti-inflammatory properties
Dose forms:	 Tabs (200 mg, 400 mg, 600 mg, 800 mg); Chew Tabs (50 mg, 100 mg) Suspension (100 mg/5 mL, 50 mg/1.25 mL); 100 mg/mL (Caldolor®)
Dosing:	 OTC: 200 - 400 mg PO q4-6h, NTE 1,200 mg/day; Rx: 400 - 800 mg PO q6h prn; NTE 3,200 mg/day Children: 5-10 mg/kg/dose PO q6-8h (antipyretic dosing)
Adverse effects:	 Edema, fluid retention, dizziness, tinnitus Gastrointestinal symptoms (epigastric pain, heartburn, dyspepsia, nausea, abdominal pain); consider adding Proton Pump Inhibitors Skin rash (exfoliative dermatitis, SJS, TEN)
Select Drug Intxns:	 Caution with anticoagulants, antiplatelets, other NSAIDs, herbs with anticoagulant/antiplatelet properties, IV/PO corticosteroids (elderly), SSRIs, bisphosphonates
Safety:	 Avoid chronic use in elderly due to ↑ risk of GI bleeding and PUD Hold/discontinue use 4-6 half-lives prior to surgical/dental procedures Contraindicated for perioperative pain post CABG (MI, stroke) May compromise renal function by ↓ renal blood flow; higher risk with dehydration, CHF, on diuretics, ACE Inhibitors, liver dysfunction, elderly

OTC NSAIDs (ibuprofen, naproxen)









Naproxen 220 mg





Ibuprofen 200 mg





Ibuprofen and Diphenhydramine





Naproxen (NSAID) – Aleve®, Anaprox®, Naprosyn®

Mechanism/T herapeutics:	 Nonselective Inhibition of cyclooxygenase peripherally and centrally leading to reduced PG Antipyretic, Analgesic and Anti-inflammatory properties
Dose forms:	 Tabs (220 mg, 250 mg, 275 mg, 375 mg, 500 mg, 550 mg, 750 mg); Suspension (125 mg/5 mL)
Dosing:	 OTC: 200 mg naproxen base PO q8-12h, NTE 600 mg/day; Rx: 500 mg PO q12h or 250 mg PO q6-8h; NTE 1,000 mg/day Extended release: 1,000 mg once daily; may temporarily ↑ to 1,500 mg
Adverse effects:	 Edema, fluid retention, dizziness, tinnitus Gastrointestinal symptoms (epigastric pain, heartburn, dyspepsia, nausea, abdominal pain); consider adding Proton Pump Inhibitors Skin rash (exfoliative dermatitis, SJS, TEN)
Select Drug Intxns:	 Caution with anticoagulants, antiplatelets, other NSAIDs, herbs with anticoagulant/antiplatelet properties, IV/PO corticosteroids (elderly), SSRIs, bisphosphonates
Safety:	 Avoid chronic use in elderly due to ↑ risk of GI bleeding and PUD Hold/discontinue use 4-6 half-lives prior to surgical/dental procedures May compromise renal function by ↓ renal bloodflow; higher risk with dehydration, CHF, on diuretics, ACE Inhibitors, liver dysfunction, elderly Contraindicated for perioperative pain post CABG (MI, stroke)

Celecoxib (COX-2 Selective NSAID) - Celebrex®

Mechanism/T herapeutics:	 Inhibits PG synthesis by
Dose forms:	• Caps (50 mg, 100 mg, 200 mg, 400 mg)
Dosing:	 Acute pain or primary dysmenorrhea: 400 mg PO initial, then additional 200 mg on Day 1; followed by 200 mg PO twice daily prn OA: 200 mg PO daily (single or divided dose); RA: 100-200 mg PO BID
Adverse effects:	 Peripheral edema Gastrointestinal symptoms (abdominal pain, dyspepsia, diarrhea) Skin rash (exfoliative dermatitis, SJS, TEN)
Select Drug Intxns:	 Caution with anticoagulants, antiplatelets, other NSAIDs, herbs with anticoagulant/antiplatelet properties, SSRIs
Safety:	 Avoid use in CHF patients (sodium, fluid retention) Avoid in severe renal and hepatic impairment Contraindicated for perioperative pain post CABG (MI, stroke) Avoid use if prior anaphylactic reaction to other NSAID to ASA therapy

Recommended Prescribing Practices for Acute Dental Pain

- Individualize treatment based on severity of pain
- Maximize non-opioids before adding a prescription opioid
- Monitor for potential adverse effects when prescribing high doses and for extended lengths of time
 - NSAID-related: GI, cardiac and renal adverse effects
 - Acetaminophen-related: liver adverse effects
- Consider
 - Pre-op dosing
 - Loading dose
 - Prescribing around-the-clock instead of prn on first day
- Reduce dose and duration of any NSAID or opioid in elderly

PDMP Resources

- General information
 - www.nh.gov/pharmacy/prescriptionmonitoring/index.htm
- FAQ
 - www.nh.gov/pharmacy/prescription monitoring/documents/pdmp fact sheet.pdf
- Register and log in
 - www.newhampshirepdmp.com

Opioid Disposal



Tell patients to dispose of any unused opioids by providing information about

- Local take-back programs, if available
- Drug Enforcement Agency (DEA)-authorized collections sites
 - Pharmacies, hospitals, law enforcement locations
- Disposal in household trash
 - Mix uncrushed pills with kitty litter or coffee grounds, seal in plastic bag and put in trash
- Flush down the toilet if appropriate; consult the 2015 FDA list at
 - www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/Bu yingUsingMedicineSafely/EnsuringSafeUseofMedicine/SafeDispos alofMedicines/UCM337803.pdf

Summary

- Recognize that opioids have limited efficacy when used alone
- Prescribe opioids in limited amounts with clear directions
- Before prescribing opioids access the PDMP to inform clinical decision for treatment of acute pain
- Educate patients about safe use of opioid and nonopioid medications, safe storage and disposal



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