

Post-Operative Pain Management

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Managing Dental Pain

The 3-D's

1. Diagnosis
2. Dental Treatment
3. Drugs



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The 3 D's - Principles for Managing Dental Pain

1 Diagnosis



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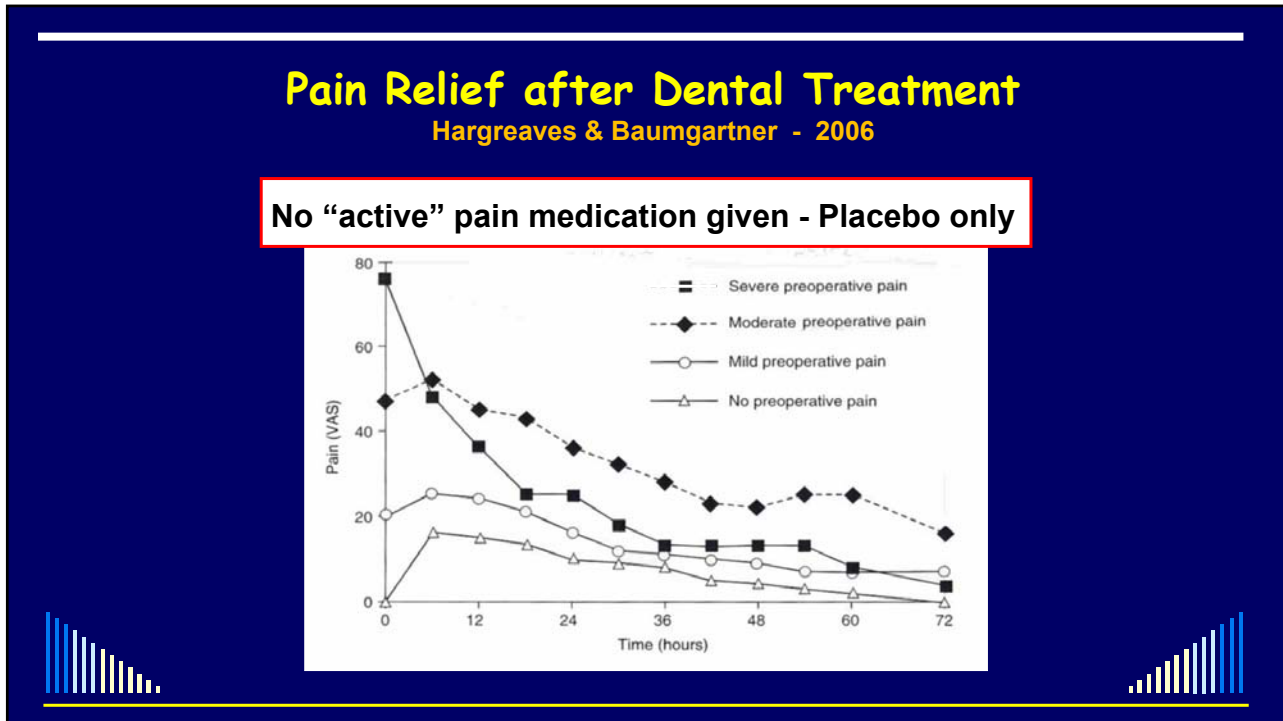
The 3 D's - Principles for Managing Dental Pain

1 Diagnosis

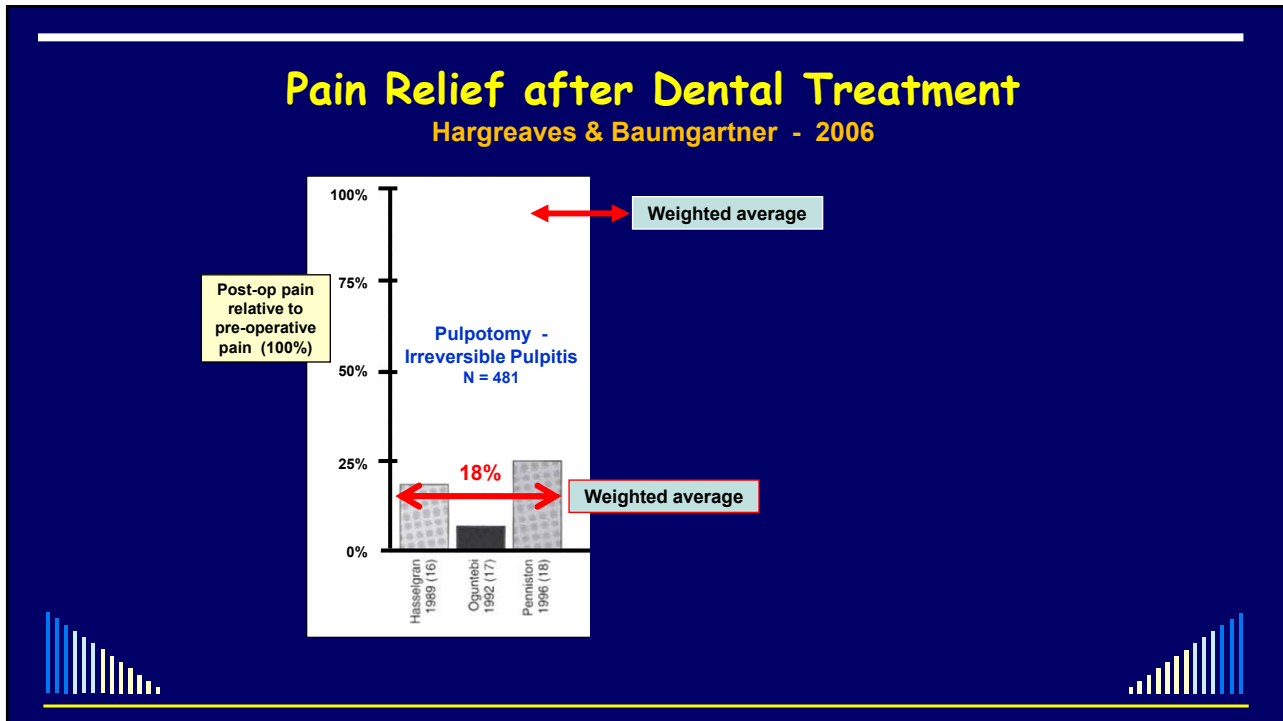
2 Dental Treatment



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The 3 D's - Principles for Managing Dental Pain

- 1 Diagnosis
- 2 Dental Treatment
- 3 Drugs

If these two are done correctly, then drugs are very rarely needed



The slide features three illustrations at the bottom: a hand holding a dental instrument, a collection of various medicine bottles and pill containers, and a single red and white capsule.

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Managing Dental & Oral Pain

- ◆ Drugs / Medication
 - Local
 - Systemic



The slide includes two cartoon illustrations of a person in pain (one holding their head, the other holding their mouth) and three illustrations of medication: a hand holding a dental instrument, a purple medicine bottle labeled 'MEDICINE' with a red cross, and a collection of various medicine bottles and pill containers.

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Managing Dental & Oral Pain



- ◆ **Drugs / Medication**
 - **Local**
 - **Local Anaesthetic**
 - ⊗ **Effective intra-operative anaesthesia helps to reduce post-operative pain**
 - ⊗ **Can use long-acting LA**
 - **e.g. Bupivacaine + adrenaline (Marcaine)**



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Managing Dental & Oral Pain



- ◆ **Drugs / Medication**
 - **Local**
 - Local Anaesthetic
 - **Topical**
 - ⊗ **Mouthwashes, creams, gels, ointments**
 - **After surgery, trauma, etc.**




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Managing Dental & Oral Pain



- ◆ **Drugs / Medication**
 - **Local**
 - Local Anaesthetic
 - Topical
 - **Intra-dental**
 - ✦ Pastes → Intra-canal




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Managing Dental & Oral Pain





- ◆ **Drugs / Medication**
 - **Local**
 - Local Anaesthetic
 - Topical
 - **Intra-dental**
 - ✦ Pastes → Intra-canal
 - ✦ **Cements → On dentine**





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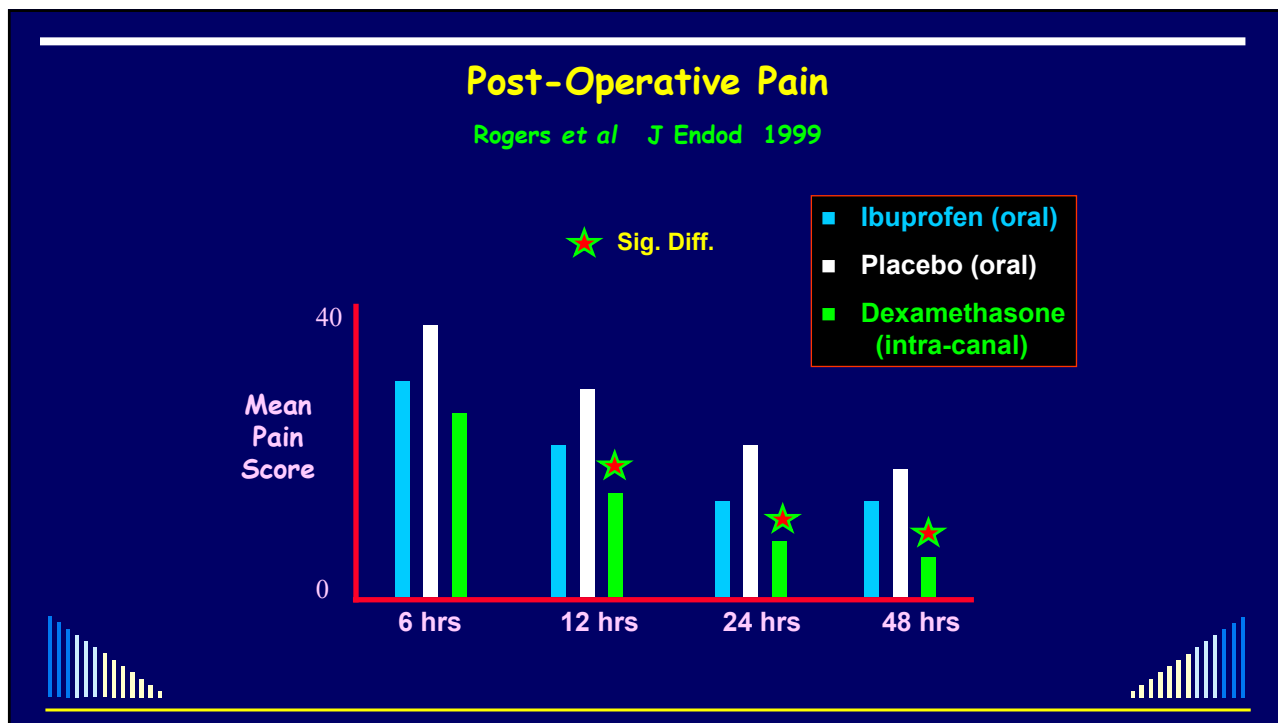
Managing Dental & Oral Pain

- ◆ **Drugs / Medication**
 - **Local**
 - *Deliver drugs to the site of required action*
 - ◆ e.g. pulp, periapical tissues, periodontal tissues
 - *Faster action*
 - ◆ No time delay waiting for GIT absorption
 - *Safer*
 - ◆ Avoids systemic complications and side effects
 - *No patient compliance problems*

Rogers et al J Endod 1999

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Managing Dental & Oral Pain

- ◆ Drugs / Medication
 - Local
 - Systemic






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Managing Dental & Oral Pain

- ◆ Drugs / Medication
 - Local
 - Systemic
 - Anti-microbial
 - Analgesic
 - Anti-inflammatory

Depends on the DIAGNOSIS !!!





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Managing Dental & Oral Pain

- ◆ **Drugs / Medication**
 - Local
 - **Systemic**
 - Anti-microbial
 - **Analgesic**
 - **Anti-inflammatory**




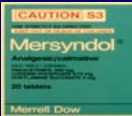
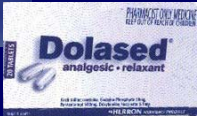
Depends on the DIAGNOSIS !!!



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Managing Dental & Oral Pain

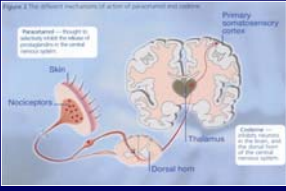
- ◆ **Drugs / Medication**
 - Local
 - **Systemic**
 - Anti-microbial
 - **Analgesic**
 - ✳ Paracetamol (acetaminophen)
 - ✳ Codeine



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Managing Dental & Oral Pain

- ◆ Analgesics - work “centrally”
 - Paracetamol
 - Selectively inhibits prostaglandin release in the CNS
 - Codeine
 - Metabolises to form morphine
 - Inhibits neurons in the brain and dorsal horn of the CNS



The diagram shows the central nervous system with labels for Skin, Nociceptors, Thalamus, and Dorsal horn. It illustrates the pathways of analgesics like paracetamol and codeine, showing how they act centrally to inhibit pain signals.

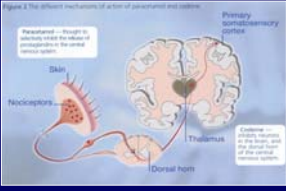
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Managing Dental & Oral Pain

- ◆ Analgesics - work “centrally”
 - Codeine
 - Metabolises to form morphine
 - Inhibits neurons in the brain and dorsal horn of the CNS
 - ★ ■ BUT need at least 30 mg to be effective in adults ★
 - 7 - 10% of Caucasians
1 - 2% of Asians
0 - 20% of Africans

Poor metabolisers of codeine to morphine

- ◆ Do not increase the dose of codeine as this causes constipation and drowsiness







The diagram shows the central nervous system with labels for Skin, Nociceptors, Thalamus, and Dorsal horn. It illustrates the pathways of analgesics like paracetamol and codeine, showing how they act centrally to inhibit pain signals.

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Managing Dental & Oral Pain

- ◆ **Drugs / Medication**
 - Local
 - **Systemic**
 - Anti-microbial
 - Analgesic
 - **Anti-inflammatory**
 - ✦ NSAID's





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Managing Dental & Oral Pain

- ◆ **Non-steroidal anti-inflammatory drugs**
 - ➔ *Work both "locally" and "centrally"*
 - **Inhibit cyclo-oxygenase which reduces the synthesis of inflammatory mediators (e.g. prostaglandins from arachidonic acid)**
 - **Common examples:**
 - ✦ Aspirin
 - ✦ Ibuprofen

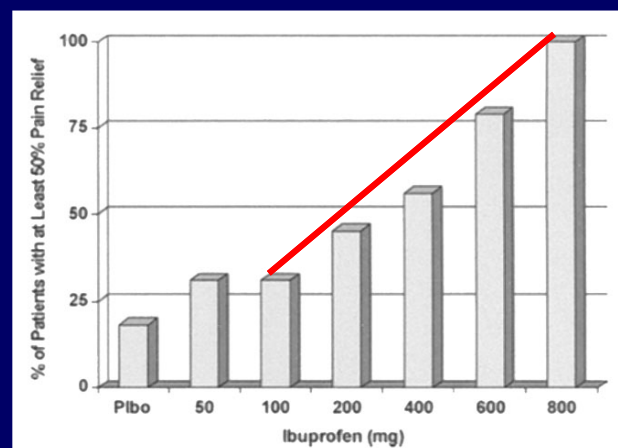
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Managing Dental & Oral Pain

- ◆ Non-steroidal anti-inflammatory drugs
 - ➔ *Work both “locally” and “centrally”*
 - Low doses ➔ pain relief
 - ➔ e.g. 200mg Ibuprofen
 - High doses ➔ anti-inflammatory action
 - ➔ At least 400mg Ibuprofen
 - ➔ But need to use as a “course of medication”
 - ➔ i.e. take at regular intervals (4 hourly is ideal)

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Managing Dental & Oral Pain



Hargreaves & Abbott ADJ 2005

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Managing Dental & Oral Pain

- ◆ **Drugs / Medication**
 - Local
 - **Systemic**
 - Anti-microbial
 - Analgesic
 - Anti-inflammatory

Combination Preparations

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Managing Dental & Oral Pain

- ◆ **Combination Preparations**
 - **Nuromol**
 - Ibuprofen 200 mg + Paracetamol 500 mg
 - **Panafen Plus**
 - Ibuprofen 200 mg + Codeine 12.8 mg
 - **Nurofen Plus**
 - Ibuprofen 200 mg + Codeine 12.8 mg

Codeine dose too low for most adults

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Post-Operative Pain after 3rd Molar Surgery

Mehlich et al - Clin Therap 2010



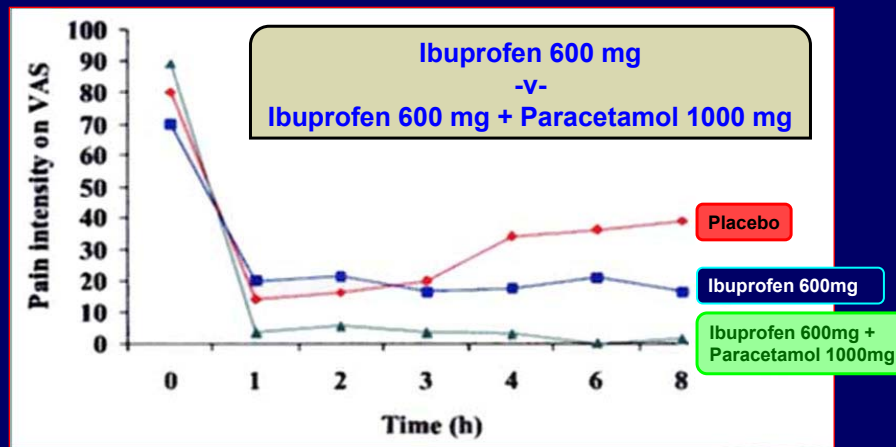
Tested Ibuprofen with Paracetamol for moderate to severe post-operative pain after 3rd molar surgery

- ◆ Ibuprofen 400 mg + Paracetamol 1000 mg
 - Sig. better than the same dose of either drug alone
- ◆ Ibuprofen 200 mg + Paracetamol 500 mg
 - Sig. better than the same dose of either drug alone
 - Sig. better than Paracetamol 1000 mg
 - But NOT sig. better than Ibuprofen 400 mg

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Pain Relief after Root Canal Treatment

Menhinick et al - IEJ 2004



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Pharmacies



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Supermarkets



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Medications for Pain Management

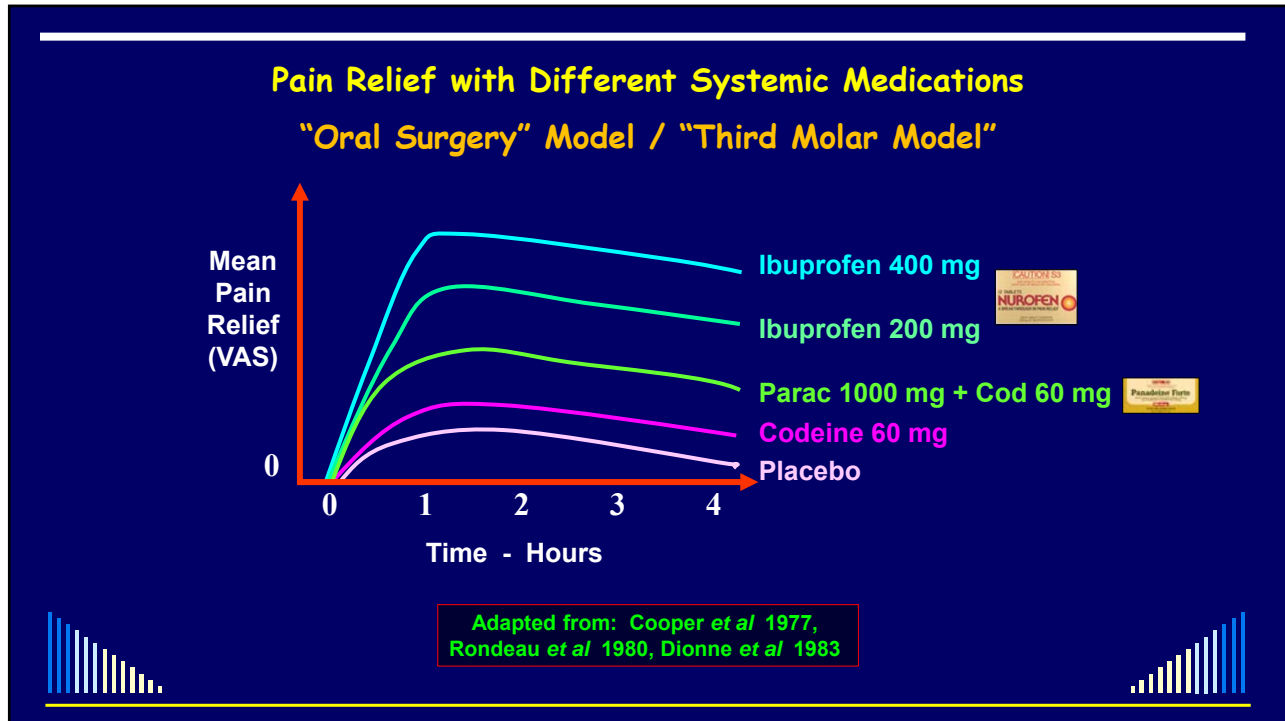
Component	No. of Preparations listed in <i>E-MIMS</i> - July 2020
Ibuprofen	51
Aspirin	29
Paracetamol / Acetaminophen	157
Codeine	48

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Medications for Pain Management

Brand	No. of Preparations listed in <i>E-MIMS</i> - July 2020
Nurofen	15
Disprin	3
Panadol / Panadeine	25 / 5

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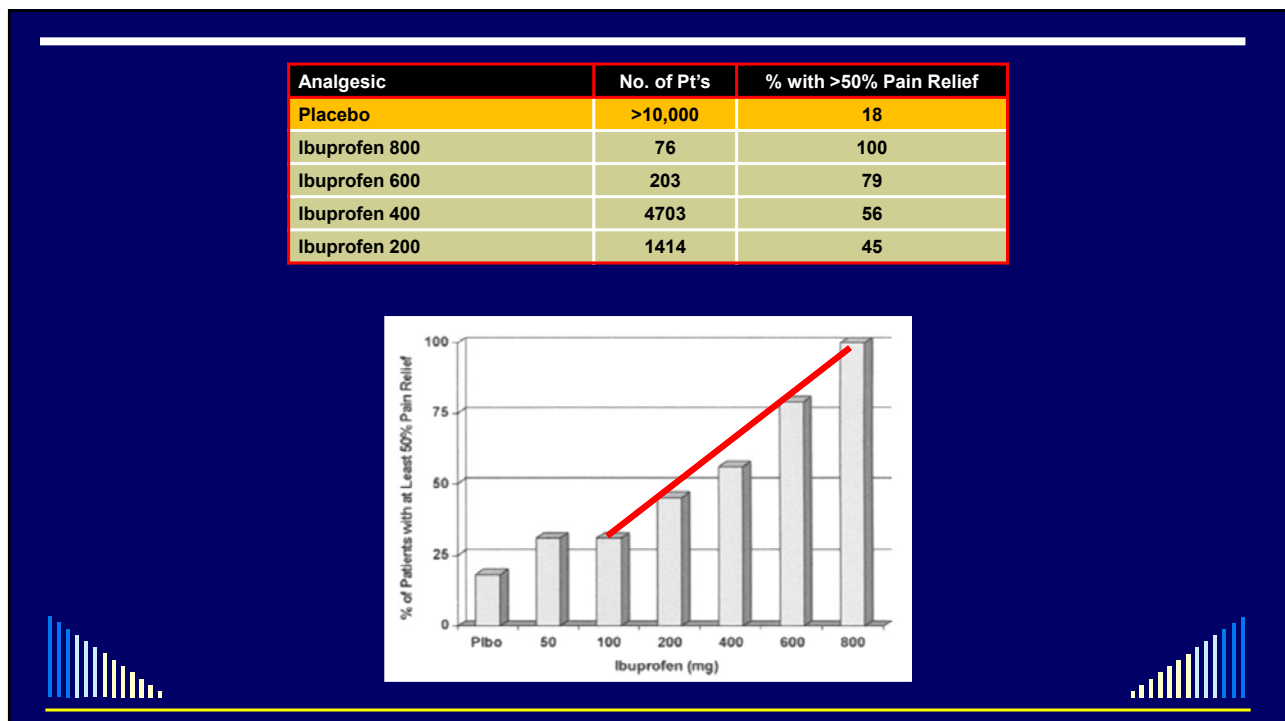
Medications for Pain Management

- ◆ The Oxford League Table of Analgesic Efficacy
 - <http://www.jr2.ox.ac.uk/bandolier/index.html>
- ◆ Proportion of patients with at least 50% pain relief over 4-6 hours - compared with placebo
- ◆ Meta-analyses of randomised, double-blind, single-dose studies
- ◆ Patients with moderate to severe pain

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Analgesic	No. of Pt's	% with >50% Pain Relief
Placebo	>10,000	18

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Analgesic	No. of Pt's	% with >50% Pain Relief
Placebo	>10,000	18
Ibuprofen 800	76	100
Ibuprofen 600	203	79
Ibuprofen 400	4703	56
Ibuprofen 200	1414	45
Aspirin 1200	279	61
Aspirin 600	5061	38

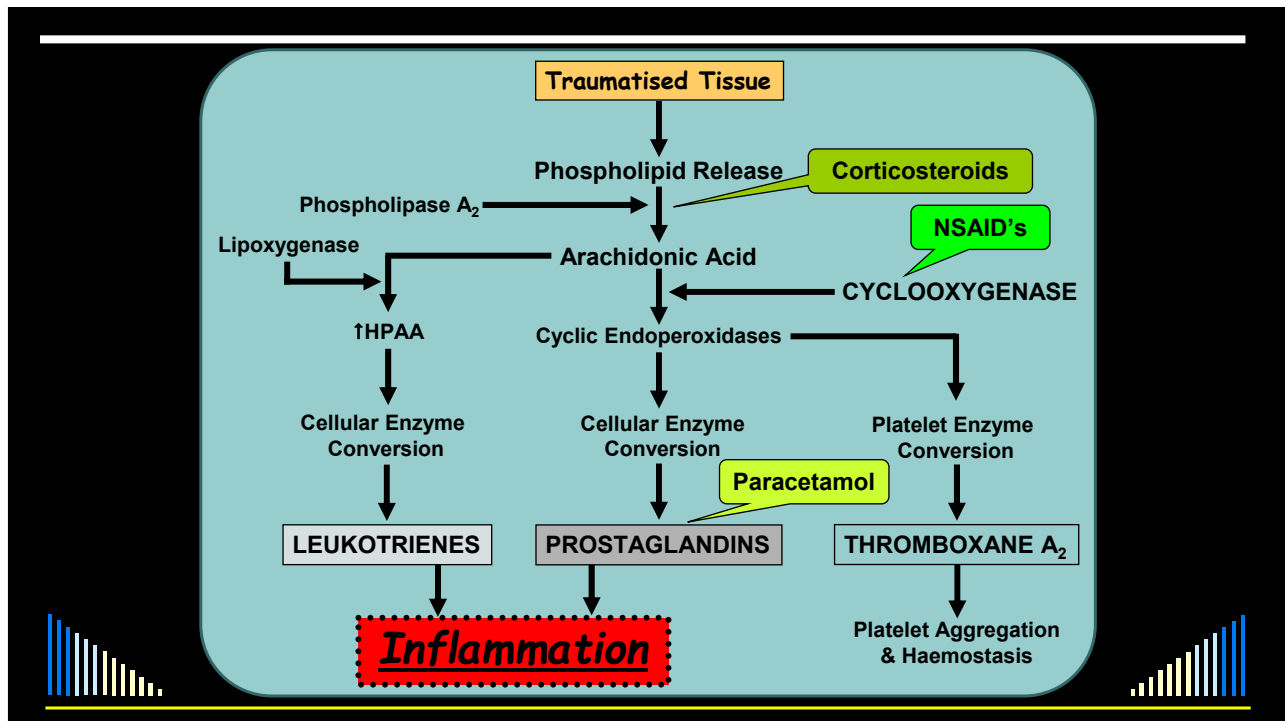
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Ibuprofen 200	1414	45
Aspirin 1200	279	61
Aspirin 600	5061	38
Paracetamol + Codeine 1000/60	197	57
Paracetamol + Codeine 600/60	1886	38
Paracetamol + Codeine 300/30	379	26
Codeine 60	1305	15
Paracetamol 1500	138	65
Paracetamol 500	561	61
Paracetamol 1000	2759	46

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Paracetamol + Codeine 300/30	379	26
Codeine 60	1305	15
Paracetamol 1500	138	65
Paracetamol 500	561	61
Paracetamol 1000	2759	46
Ketolorac 20	69	57
Naproxen 440	257	50
Pethidine 100 (IM)	364	54
Morphine 10 (IM)	946	50

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Pain Relief after Dental Treatment

Four Questions to Consider

1. **How much pre-treatment pain has there been?**
 - > **FIVE** times more likely to have moderate to severe pain after treatment if moderate to severe pain present prior to treatment (O'Keefe 1976)
2. **Pain during treatment**
 - > More likely to have post-operative pain (esp. long-term chronic pain) if pain during treatment - due to central sensitisation
3. **How much pain is likely after treatment?**
 - > Mild ? > Moderate ? > Severe ?
4. **Can the patient use NSAID's?**
 - > Check for: Asthma, peptic ulcer, drug interactions, etc.

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Pain Relief after Dental Treatment

Pain Level:	MILD	MODERATE	SEVERE
NSAID's can be taken			
NSAID's contra-indicated			

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Pain Relief after Dental Treatment

Pain Level:	MILD	MODERATE	SEVERE
NSAID's can be taken	400 mg Ibuprofen every 4 hours	400 - 600* mg Ibuprofen 4 hourly PLUS 1000 mg Paracetamol every 4 hours	400 - 600* mg ibuprofen PLUS 1000 mg paracetamol with 60 mg codeine ** every 4 hours



NOTES:

ALL cases: 1 - 3 days usually sufficient. If still pain, review and reassess

* Only take higher dose on 1 or 2 occasions

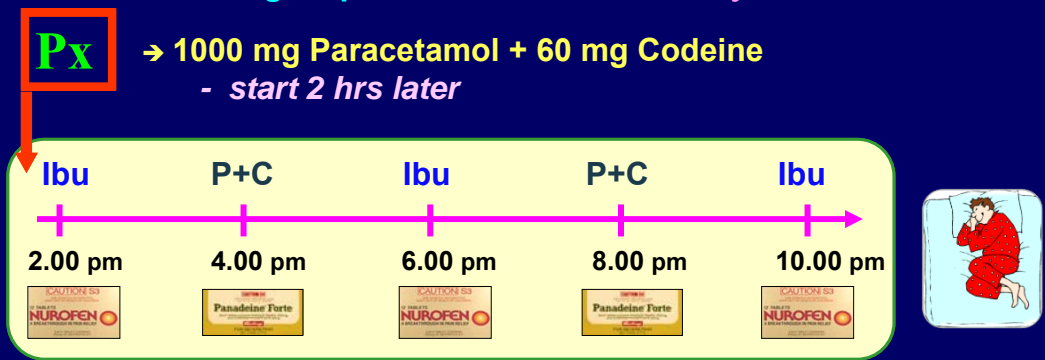
** Alternate Ibuprofen & Paracetamol / Codeine at 2-hourly intervals

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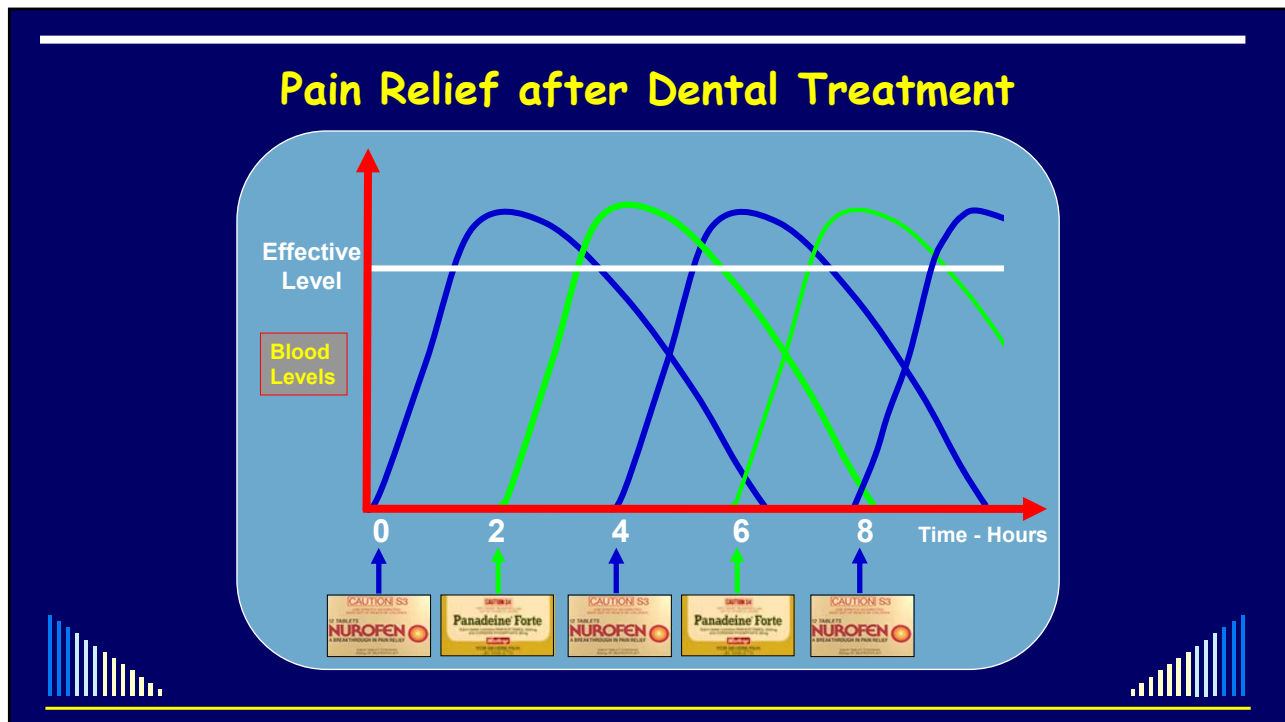
Pain Relief after Dental Treatment

◆ **Alternate at 2 hourly intervals:**

- 400 mg Ibuprofen - *start immediately*
- 1000 mg Paracetamol + 60 mg Codeine - *start 2 hrs later*



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Pain Relief after Dental Treatment

- ◆ *Alternate at 2 hourly intervals:*
 - 400 mg Ibuprofen - *start immediately*
 - 1000 mg Paracetamol + 60 mg Codeine - *start 2 hrs later*



◆ **Paracetamol + Codeine** - stop next day






◆ **Ibuprofen** - continue for 2-3 days

- Use as a “course” of medication
 - ◆ **For its anti-inflammatory action**
- Even once the pain has reduced

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Pain Relief after Dental Treatment

Pain Level:	MILD	MODERATE	SEVERE
NSAID's can be taken	400 mg Ibuprofen every 4 hours	400 - 600* mg Ibuprofen 4 hourly PLUS 1000 mg Paracetamol every 4 hours	400 - 600* mg Ibuprofen PLUS 1000 mg Paracetamol with 60 mg Codeine ** every 4 hours
NSAID's contra-indicated	1000 mg Paracetamol every 4 hours	1000 mg Paracetamol with 60 mg Codeine every 4 hours	1000 - 1500* mg Paracetamol with 60 - 90* mg Codeine every 4 hours

NOTES:

ALL cases: 1 - 3 days usually sufficient. If still pain, review and reassess

* Only take higher dose on 1 or 2 occasions

** Alternate Ibuprofen & Paracetamol / Codeine at 2-hourly intervals

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Maximum Daily Doses - for Adults

Drug	Maximum Daily Dose (mg)	Typical Tablet or Capsule (mg)	Maximum Tabs/Caps per Day	Allowable Regime
Ibuprofen	2,400	200	12 x 200	2 tabs 4 hourly
Paracetamol	4,000	500	8 x 500	2 tabs 4 hourly BUT only 4x/day (i.e. NOT 6x/day)
Codeine	360	30	12 x 30	2 tabs 4 hourly

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Managing Dental Pain

- ◆ Diagnose the *CAUSE* and *TYPE* of pain
 - *Inflammation*
 - and / or
 - *Infection*



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Managing Dental Pain


Medications available for dental pain

<i>Type of Drug</i>	<i>Method of Use</i>
<ul style="list-style-type: none"> ■ Anti-inflammatory ■ Analgesic ■ Antibiotic 	<ul style="list-style-type: none"> ■ Local ■ Systemic

Depends on the *CAUSE* and *TYPE* of pain

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Managing Dental Pain



1. Thorough assessment of the presenting problem
2. Adequate treatment / management
 - Of the patient, tooth, pulp, gingiva, mucosa, muscles, etc.
3. Appropriate medication


➔ PREDICTABLE Pain Relief

The 3-D's ➔

1. Diagnosis
2. Dental Treatment
3. Drugs

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Managing Dental Pain



◆ Then follow the 3-R's !!!

1. Review - has the pain gone?
If YES ➔ then no further pain management is needed
But if NO

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Managing Dental Pain

◆ Then follow the 3-R's !!!



1. Review - has the pain gone?
2. Reassess - the diagnosis
3. Reconsider - the management