Treating Pain

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Disclosure

I have nothing to disclose.
Ogden Nash

“Some pains are physical, and some pains are mental, but the one that's both is dental.”

Common quote:

“Opioids are the most potent medications we have for treatment of pain.”

Opioid facts

The United States has 4.6% of the world’s population.
- We use 80% of the world’s opioids!\(^1\)
- 83% of the world’s population has no access to any opioids.\(^2\)

Opioid increase

Drug distribution through the pharmaceutical supply chain was the equivalent of 96 mg of morphine per person in 1997.

and approximately 640 mg per person in 2015, an increase of >500%.\(^4, 48\)
Rates of opioid overdose deaths, sales and treatment admissions, US, 1999-2010.7

Dental Opioids and Youth58

Table 1. Proportion of Medicaid Patients Dispensed Opioids Following Surgical Extraction of Teeth, 2000-2010a

<table>
<thead>
<tr>
<th>Age group, y</th>
<th>No. of Patients</th>
<th>Dispensed Opioid, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall cohort</td>
<td>2,757,273</td>
<td>1,161,747 (42)</td>
</tr>
<tr>
<td>≤13</td>
<td>367,219</td>
<td>52,528 (14)</td>
</tr>
<tr>
<td>14-17</td>
<td>657,535</td>
<td>400,549 (61)</td>
</tr>
<tr>
<td>18-24</td>
<td>646,370</td>
<td>339,386 (52)</td>
</tr>
<tr>
<td>25-34</td>
<td>492,104</td>
<td>196,051 (40)</td>
</tr>
<tr>
<td>35-44</td>
<td>302,048</td>
<td>97,703 (32)</td>
</tr>
<tr>
<td>45-54</td>
<td>184,500</td>
<td>51,557 (28)</td>
</tr>
<tr>
<td>≥55</td>
<td>107,497</td>
<td>23,973 (22)</td>
</tr>
</tbody>
</table>
Understanding pain

Pain
An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

International Association for the Treatment of Pain

Also cognitive influences....
Pain

Acute pain: Pain < 3 months
Chronic pain: Pain > 3 months

4 types of pain (acute and chronic)

- Nociceptive
- Neuropathic
- Central Sensitization
- Opioid withdrawal
Central Sensitization

Dysfunction of the positive and negative pain feedback systems in the CNS that increase the sensation of pain.

Pain pathways

Nociceptor → Spinothalamic nerve → Thalamus → Amygdala (fear) → Hippocampus (memory) → Limbic system (emotion) → Prefrontal cortex (rational thinking) → Somatosensory nerve (pain)
Central sensitization

- **Nociceptor**
- **Spinothalamic nerve**
- **Thalamus**

**Somatosensory nerve (pain)**
- Amygdala (fear)
- Hippocampus (memory)
- Limbic system (emotion)
- Prefrontal cortex (rational thinking)

**Central sensitization Inventory**

Subclinical = 0 - 29
Mild = 30 - 39
Moderate = 40 - 49
Severe = 50 – 59
Extreme = 60 - 100.

1. Pain is not the problem when I wake from sleeping.  Never Rarely Sometimes Often Always
2. My wounds heal well and fast.  Never Rarely Sometimes Often Always
3. Feeling was the same.  Never Rarely Sometimes Often Always
4. Pain persists even in sleep.  Never Rarely Sometimes Often Always
5. Either problems with sleep or nerve irritation.  Never Rarely Sometimes Often Always
6. I can't walk for more than 10 minutes.  Never Rarely Sometimes Often Always
7. Either tired or off balance can cause symptoms.  Never Rarely Sometimes Often Always
8. I don't get out of my daily activities.  Never Rarely Sometimes Often Always
9. Either problems in my daily work.  Never Rarely Sometimes Often Always
10. Either problems in my daily work.  Never Rarely Sometimes Often Always
11. Either problems in my daily work.  Never Rarely Sometimes Often Always
12. Either problems in my daily work.  Never Rarely Sometimes Often Always
13. Either problems in my daily work.  Never Rarely Sometimes Often Always
14. Either problems in my daily work.  Never Rarely Sometimes Often Always
15. Either problems in my daily work.  Never Rarely Sometimes Often Always
16. Either problems in my daily work.  Never Rarely Sometimes Often Always
17. Either problems in my daily work.  Never Rarely Sometimes Often Always
18. Either problems in my daily work.  Never Rarely Sometimes Often Always
19. Either problems in my daily work.  Never Rarely Sometimes Often Always
20. Either problems in my daily work.  Never Rarely Sometimes Often Always
21. Either problems in my daily work.  Never Rarely Sometimes Often Always
22. My leg/foot/ankle/foot has been numb or tingly.  Never Rarely Sometimes Often Always
23. Either俄 clock impression.  Never Rarely Sometimes Often Always
24. Either time of day.  Never Rarely Sometimes Often Always
TMD

• Central sensitization is much more common in individuals with temporomandibular disorders.⁶⁰

Acute vs. Chronic Pain

ACUTE PAIN

Sensory – tissue input
Affective – emotions
Cognitive - thoughts
Opioid withdrawal pain

- Occurs with reduction in opioid dose for those who have been on opioid therapy – even for acute pain treatment.
- Usually is felt in the area where there is a history of pain.

Understanding Opioids
Opioids are the most dangerous drugs...

Dopamine + Opioid receptors
Dopamine

Enable us to achieve a goal (short term).\textsuperscript{23,24}
- Decrease pain (minimal effect).
- Increase motivation.
- Increase confidence.
- Increase reward.
- Reduce depression and anxiety.
- Increase “warmth-liking”.\textsuperscript{25}
  - Liking warm things.
  - Interpersonal bonding.

Opioid receptors
Primary purpose:

**Dopamine** – Our primary reward system. This is what we live for.

**Endorphins and opioid receptors** – These maximize our ability to achieve the reward

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The *Wizard of Oz*

The “Dorothy Reaction”
Pain Treatment

Acute pain: treatment

- Acetaminophen
- NSAIDS
- Opioids
- Topical agents
- Nonpharmacologic (PT, ice, heat, etc.)
- Local injections
Opioids for acute pain

Side Effects:
- Mentally impairing.\textsuperscript{8,9}
- Delay recovery.\textsuperscript{10,11}
- Opioid hyperalgesia.\textsuperscript{13,14}
- Treat depression.\textsuperscript{19}
- Immunosupression.\textsuperscript{53}
- Brain changes.\textsuperscript{20}
- Addiction.\textsuperscript{21,22}

Prescription Opioids in Adolescence and Future Opioid Misuse

Richard Mireh, PhD\textsuperscript{a}, Lloyd Johnston, PhD\textsuperscript{b}, Patrick M. O’Malley, PhD\textsuperscript{b}, Katherine M. Keyes, PhD\textsuperscript{b}, Kennon Heard, MD\textsuperscript{c}

Teens who received a prescription for opioid pain medication by Grade 12 were at \textit{33 percent} increased risk of misusing an opioid between ages 19 and 25.

Among those with low predicted risk of future opioid use in 12th grade, having an opioid prescription increased their risk of post-high-school opioid misuse \textit{three-fold}.
Percentage of Prescriptions Dispensed for Opioid Analgesics From Outpatient US Retail Pharmacies, 2009-2015

Acute rx leads to long-term use

Duration of acute use:
1 day - 6% chance of still using that drug a year later.
8 days - 13.5%.
31 days - 29.9%.
Efficacy of pain medications
Acute pain

Percent with 50% pain relief

Ibuprofen 200 mg
Acetaminophen 500 mg
Ibuprofen 400 mg
Oxycodeone 15 mg
Oxy 10 + acet 1000
Ibu 200 + acet 500

Percentages:
37
28
40
21
37
62

Single Dose Analgesic Efficacy of Tapentadol in Postsurgical Dental Pain: The Results of a Randomized, Double-Blind, Placebo-Controlled Study.
Kleinert, Regina; Lange, Claudius; MD, MSc; Steup, Achim; Black, Peter; Goldberg, Jutta; Desjardins, Paul; DMD, PhD
Opioids and acute pain

All studies on opioids used for acute pain have shown that the longer they are used, the worse the outcomes!

The CDC recommends 3 days or less for acute pain.

Treatment of chronic pain

• Behavioral therapy:
  • Cognitive Behavioral Therapy
    • (redirect your thoughts)
  • Mindfulness training
    • (ignore your thoughts)
  • Decatastrophizing – this will make your job MUCH easier!
When are opioids indicated?

• Following severe trauma (for a short period)
• End of life

Key points

• Opioids are not very effective pain medications.
• Opioids do lead to addiction.
• We must prevent first exposure!
• We must consider each pill that is prescribed. More pills cause:
  • More damage to the brain
  • Increase risk of addiction and death
  • More chronic pain
Recommendations

• Use ibuprofen and acetaminophen whenever possible for oral treatment of acute pain. **Opioids are seldom needed for outpatient treatment of pain.**

• When IV medications are needed, use ketorolac (or ibuprofen) and acetaminophen to decrease (or eliminate) opioid need.

• Use opioids for their behavioral effects (calming) when absolutely necessary and then for just 1-3 days.

• The use of opioids should never be automatic!

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Excerpt from:
University of Minnesota School of Dentistry Guideline
(This is a mandatory guideline)

<table>
<thead>
<tr>
<th>If NSAIDS can be tolerated:</th>
<th>Analgesic Recommendation</th>
</tr>
</thead>
</table>
| **Pain Severity**           | **Step 1:** Ibuprofen (400-600 mg) q6 hours: fixed intervals for 24 hours  
                            | **Step 2:** Ibuprofen (400 mg) q4-6 hours prn for pain  
                            | **Step 1:** Ibuprofen (400-600 mg) with APAP (500 mg) q6 hours: fixed interval for 24 hours  
                            | **Step 2:** Ibuprofen (400 mg) with APAP (500 mg) q6 hours prn for pain  
                            | **Step 1:** Ibuprofen (400-600 mg) with APAP (650 mg) with (5mg) hydrocodone q6 hours: 3-day supply.  
                            | **Step 2:** Ibuprofen (400-600 mg) with APAP Ibuprofen (400-600 mg) with APAP (500 mg) q6 hours: prn for pain |
Total Opioid Prescriptions per Quarter

My story:
Periodontist and nurse after gum graft.
What I hear:

“If I don’t prescribe opioids, word will get out and I will lose business.”

CLINICAL PRACTICE

Combining ibuprofen and acetaminophen for acute pain management after third-molar extractions

Translating clinical research to dental practice

Paul A. Moore, DMD, PhD; Elliot V. Hersh, DMD, MS, PhD

250,000

Number of deaths in the last 20 years from opioids.
More than 4 times the number of American deaths in the Vietnam war
This is an epidemic. And we are the vector!
This epidemic is completely reversible with a change of behavior that will result in better pain management

“To write prescriptions is easy, but to come to an understanding with people is hard.”

-- Franz Kafka, “A Country Doctor”
References:


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