Opioid Case Studies

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Disclosures

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None

Off Label and/or Investigative Uses
None
I am very comfortable managing pain in my patients.

A. All of the time
B. Most of the time
C. Some of the time
D. Never
E. Who cares about pain?
Learning Objectives

• Demonstrate understanding of opioid selection

• Formulate algorithmic implementation of opioid therapy

• Justify application of opioid therapy
• “There is no tyrant as merciless as pain…”
  • Stephen King, *Duma Key* (2008)
Case 1 – JS

• 68 yo F with osteosarcoma of the right femur planning for prophylactic stabilization
• Fell at home today – “snap” and sharp pain
• Current dose of opioid therapy
  • _________ 80 mg by mouth BID
  • Oxycodone 10 mg – minimum 4 doses/d
• She see’s you in the ED and is asking for your help to control the pain.

• Quick calculation = 300 OMED
I would feel comfortable giving morphine 15-20 mg IV once now and reassess.

A. All of the time
B. Most of the time
C. Some of the time
D. Never
E. Who cares about pain? Fix her leg!
I would feel comfortable giving hydromorphone 2 mg IV once now and reassess.

A. All of the time
B. Most of the time
C. Some of the time
D. Never
E. Who cares about pain? Fix her leg!
# The Equianalgesic Table

<table>
<thead>
<tr>
<th></th>
<th>PO</th>
<th>IV/SQ</th>
<th>Relative Potency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Morphine</strong></td>
<td>30 mg</td>
<td>10 mg</td>
<td><strong>1:3</strong></td>
</tr>
<tr>
<td><strong>Oxycodone</strong></td>
<td>20 mg</td>
<td>N/A</td>
<td><strong>--</strong></td>
</tr>
<tr>
<td><strong>Hydromorphone</strong></td>
<td>7.5 mg</td>
<td>1.5 mg</td>
<td><strong>1:5</strong></td>
</tr>
<tr>
<td><strong>Fentanyl</strong></td>
<td>N/A</td>
<td>100 mcg</td>
<td><strong>--</strong></td>
</tr>
<tr>
<td><strong>Oxymorphone</strong></td>
<td>10 mg</td>
<td>1 mg</td>
<td><strong>1:10</strong></td>
</tr>
</tbody>
</table>

Quick run through…

• Mrs. S takes __________ 80 mg PO BID + at least 4 doses/d of oxycodone 10 mg
  • = 200 mg oxycodone/d

• 200 oxycodone/d x (30/20) = 300 OMED

• 300 OMED / 3 = 100 mg IV morphine/d

• 10-20% daily dose = Morphine 10 – 20 mg IV
  • Hydromorphone 1.5 – 3 mg IV
  • Fentanyl 100 – 200 mcg IV
How to adjust the dose

• Pain score unchanged: Give double the dose
• Pain score ↓ <50% : Repeat same dose
• Pain score ↓ >50% : Consider this the effective dose and repeat PRN q 2-3 hr oral or q 1-2 hr IV

➢ If oral rescue dose, re-assess in 60 minutes
➢ If IV rescue dose, re-assess in 15 minutes.

Adult Cancer Pain. 2014. NCCN Clinical Practice Guidelines in Oncology.
Clinical Pearl #1

• Acute, severe pain not relieved by initial dosing regimen requires frequent re-dosing with close monitoring

• Baseline currency = Oral Morphine Equivalents
  (Acronyms: OME, OMED, MME, MEDD)
Case 2 - TJ

- 59 yo F with long-standing DM - Type 1 with complications of ESRD on HD for over 12 years
- Admitted to Medicine directly from Dermatology clinic for pain management
- Several ulcerations on her lower extremities and abdomen, consistent with calciphylaxis
- Chronic LBP controlled with oxycodone 10 mg four times per day
- Concerned about acute pain control
Which of the following is the next best choice for pain control in this patient?

A. Morphine 2 mg IV q 4 hr as needed pain
B. Morphine PCA 2 mg q 10 min with 1 mg/hr cont infusion
C. Hydromorphone 0.8 mg IV q 4 hr as needed pain
D. Fentanyl 50 mcg IV q 1 hr as needed pain
E. Oxycodone 15 mg PO q 4 hr as needed pain
<table>
<thead>
<tr>
<th>Opioid (Duration)</th>
<th>Common Dose</th>
<th>Formulas</th>
<th>Active Metabolite</th>
<th>Clinical Pearls</th>
</tr>
</thead>
</table>
| **Morphine (3-4h)** | 10-30 mg q 3-4 hours | IV Oral (liquid) Rectal Long-acting | Morphine-6 GL Morphone-3 GL | • Avoid in renal failure  
• Greater respiratory depression  
• Neuro excitatory-myoclonus  
• Histamine release |
| **Hydrocodone (4-6h)** | 5-10 mg q 4-6 hours | Oral (liquid) Long-acting | Hydromorphone | • #1 drug prescribed/abused  
• Screen may show hydromorphone  
• Commonly used and well tolerated |
| **Oxycodone (4-6h)** | 5-10 mg q 4-6 hours | Oral (liquid) Long-acting | Oxymorphone | • Screen may show oxymorphone  
• Consider avoiding in renal failure |
| **Oxymorphone (3-4h)** | 10-20 mg q 4-6 hours | IV Oral (liquid) Long-acting | 3-glucuronide, 6-hydroxy | • Reduce dose if CrCl <50ml/min  
• Extensive 1st pass metabolism |
| **Hydromorphone (2-3h)** | 2-4 mg q 3 hours | IV Oral (liquid) Rectal Long-acting | Hydromorphone-3 GL | • Reasonable choice in renal failure |
| **Fentanyl (1-2h)** | 12.5 mcg/hour TD patch | IV Transmucosal Transdermal | None | • Best choice in renal failure  
• Not a first-line medication  
• Caution with CYP3A4 inhibitor drugs (i.e diltiazem, amiodarone, fluconazole) |
| **Tramadol (4-6h)** | 50-100 mg q 4-6 hours | Oral | Morphine | • Pro-drug  
• NE and serotonin reuptake inhibitor  
• Serotonin Syndrome  
• Caution if seizure disorders |
Selection of Opioid

- Time to pain relief – short acting opioids
  - Oral/Sublingual
    - Time to peak effect = 45 – 60 min
  - IV
    - Time to peak effect = 6 – 15 min
    - Fentanyl > hydromorphone > morphine
  - SQ
    - Time to peak effect = 20 – 30 min
- Long acting forms of opioids should be avoided initially
- Transdermal route take 12 - 24 hours for effect
- IM is not recommended - erratic dispersion and painful

Advantages of PCA

Frequent small boluses of opioid can provide better analgesia with less toxicity

Clinical Pearl #2

• Acute, severe pain requires parenteral opioids
  • Quick onset for peak analgesic effect
Case 3 - DA

- 46 yo F refractory metastatic breast cancer, finished palliative chemo 2 weeks ago
- Enrolled in home-based hospice care
- Increasingly difficult by mouth intake
- Current opioid regimen with stable control
  - ____________ 80 mg PO BID
  - Hydromorphone 4-8 mg PO q 3 hr as needed pain (average 16 mg/day)
You are converting her to TD Fentanyl. What would be the dose equivalent of her current opioid use?

A. TD Fentanyl 50 mcg/hr  
B. TD Fentanyl 75 mcg/hr  
C. TD Fentanyl 100 mcg/hr  
D. TD Fentanyl 150 mcg/hr  
E. TD Fentanyl 200 mcg/hr
Wait, that’s all she needs?

- _________ 160 mg/d + hydromorphone 16 mg/day
- 160 mg oxycodone/d * (30/20) = 240 OMED
- 16 mg hydromorphone/d * (30/7.5) = 64 OMED
- 304 OMED / 2 = 152 → 150 mcg/hr TDF
- Typically, reduction for incomplete cross-tolerance not needed
- Continue as needed breakthrough medication
Transdermal Therapy – Fentanyl

• 2:1 Rule
  • Calculate 24-hour OMED
  • Divide by 2 → TD Fentanyl patch (mcg/hr)
  • i.e. 50 mg oral morphine daily = 25 mcg/hr patch

• Patches changed every 72 hours

• Titrate every 3 days

• 12 - 24 hours to reach steady levels
  • 50% of drug in system 18 hours after removal

• Absorption varies (e.g. temp, edema, lean body mass)

Clinical Pearl #3

• 2:1 Rule for TD Fentanyl
  • OMED (mg/d) / 2 = TDF (mcg/hr) patch
Case 4 – BB

- 64 yo M laborer with chronic LBP, depression, tobacco use
- Lost his job 3 months ago due to poor performance
- Concerned about LBP and his poor mobility
- Functional movement patterns without focal deficits
- Requesting disability and “pain killers”
New CDC guidelines suggest there is no role for the use of opioids in chronic non-cancer pain.

A. True
B. False
The new CDC guidelines suggest “careful reassessment of individual benefit” at dose of morphine greater than...?

A. 30 mg OMED
B. 50 mg OMED
C. 70 mg OMED
D. 90 mg OMED
E. 100 mg OMED
Changing the rules

• Non-opioid and non-pharmacologic therapy preferred

• Only consider if expected benefits for pain and function outweigh risks

• Establish clinically meaningful goals and improvement of therapy prior to commencement

• Have cessation plan outlined if goals not met
  • Prescription Drug Monitoring Program
  • Urine Drug Analysis
  • Avoid polypharmacy – benzodiazepines

http://www.cdc.gov/drugoverdose/index.html
Multimodal approach = Success

Surgery

Advanced Procedures

Non-pharmacologic (PT, OT, MT, Acup)

Psychological Services

Medications

Injections
Clinical Pearl #4

• Avoid initiating opioids without discussion about goals, clinical improvement, and risks-benefits
  • Utilize multimodal therapies to enhance therapeutic effect
Case 5 - JB

- 55 yo M with mediastinal adenocarcinoma and painful CIPN from carboplatin and paclitaxel based neoadjuvant chemo
- History of VTE currently on rivaroxaban
- Imaging reveals no disease progression, central nervous system invasion, or recurrent vascular cause
- He is resistant to using opioids for treatment as it makes him feel “goofy”
  - He can’t drive or fish with his grandson
In addition to non-opioid adjuvant therapy, what longer-acting opioid therapy would you consider initiating?

A. ________ 20 mg by mouth BID
B. Methadone 5 mg by mouth BID
C. MS Contin 30 mg by mouth BID
D. Buprenorphine TD 5 mcg/hr q 7 days
E. Fentanyl TD 25 mcg/hr q 72 hours
Not your average opioid

- Multiple indications for buprenorphine TD
- μ-opioid partial agonist – potent affinity
- 72 hours to reach steady levels – wait a week
- Convenient – change every 7 days
- May initiate in opioid-naïve patients
  - OME < 30 mg → Buprenorphine 5 mcg/hr
  - OME 30-80 mg → Buprenorphine 10 mcg/hr
- May precipitate withdrawals in opioid tolerance

Clinical Pearl #5

• Use of appropriate selective opioid therapy can improve pain and impact quality of life
  • Avoid fear and pain behaviors that propagate cycle of deconditioning and disability
Summary

• Utilize parenteral opioids for acute pain

• Illustrate appreciation of opioid equivalency, titration, and side effects

• Implement safe practices using current guidelines and knowledge of opioid therapies
Thank You

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