Evidence-based Best Practice in Pain Management

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Pain management...

A pharmacologically based model for prescribing most symptom-control medications used in palliative care...
Learning Objectives

• Identify a drug at each level of WHO Ladder

• Articulate a plan to assure safe administration that limits possibility of drug diversion at home

• Distinguish steady-state dosing at the half-life from titrating using the time to maximum concentration for opioids

• Identify one adjuvant drug class for inflammatory pain and one for neuropathic pain
Video Clip

- Hector
- 58 yo Hispanic Man
- Metastatic Colon Cancer with painful met in lower leg
- Seeing Primary Care Physician
- Daughter with him
Watch For

- Assessment
- Choice of analgesic
- Patient / Daughter Response
Debrief

• What was effective?
• What could have been improved?

• Assessment
• Choice of analgesic
• Response to concerns
  Adverse Effects
  Addiction
Choosing analgesics...
CHOOSING AN ANALGESIC

WHO 3-STEP LADDER

When first starting an analgesic, choose one based on the severity of the patient’s pain. Within a step, choose the analgesics most appropriate for each patient:

<table>
<thead>
<tr>
<th>Severity</th>
<th>Start at Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3</td>
<td>1</td>
</tr>
<tr>
<td>4 - 6</td>
<td>2</td>
</tr>
<tr>
<td>7 - 10</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Mild (1-3)
   - Acetaminophen/Paracetamol
   - ASA/NSAIDs
   - ± Adjuvants
   - (Propoxyphene not indicated)

2. Moderate (4-6)
   - Codeine
   - Tramadol
   - A/Codeine
   - A/Hydrocodone
   - A/Oxycodone
   - ± Adjuvants
   - (Meperidine/pethidine & pentazocine not indicated)

3. Severe (7-10)
   - Morphine
   - Fentanyl
   - Hydromorphone
   - Methadone
   - Oxycodone
   - ± Adjuvants

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WHO Ladder

1, Weak
- ASA
- Paracetamol / Acetaminophen
- NSAID’s
- ± Adjuvants

2, Moderate
- Codeine
- Tramadol
- A / Codeine
- A / Hydrocodone
- A / Oxycodone
- A / Dihydrocodeine
- ± Adjuvants

3, Strong
- Morphine
- Hydromorphone
- Fentanyl
- Oxycodone
- Methadone
- Levorphanol
- ± Adjuvants


= Medications grouped by relative strength
WHO Ladder

Choose group to START with based on pain severity

1, Pain 1 – 3
- ASA
- Paracetamol / Acetaminophen
- NSAID’s
- ± Adjuvants

2, Pain 4 – 6
- Codeine
- Tramadol
- A / Codeine
- A / Hydrocodone
- A / Oxycodone
- A / Dihydrocodeine
- ± Adjuvants

3, Pain 7 – 10
- Morphine
- Hydromorphone
- Fentanyl
- Oxycodone
- Methadone
- Levorphanol
- ± Adjuvants

Question 1

• Which Step is associated with the most deaths in the US?

Step 1
Step 2
Step 3
Question 1

• Which Step is associated with the most deaths in the US?

Step 1
Liver Failure related to Acetaminophen
Kidney Failure and GI Bleed related to NSAIDs

Step 2

Step 3
WHO Ladder

 Dangerous medications are...

1, Pain 1 – 3
- ASA
- Paracetamol / Acetaminophen
- NSAID's
- ± Adjuvants

2, Pain 4 – 6
- Codeine
- Tramadol
- A / Codeine
- A / Hydrocodone
- A / Oxycodone
- A / Dihydrocodeine
- ± Adjuvants

3, Pain 7 – 10
- Morphine
- Hydromorphone
- Fentanyl
- Oxycodone
- Methadone
- Levorphanol
- ± Adjuvants

**WHO Ladder**

*Equi-analgesic dosing...*

1, Pain 1 – 3

- ASA
- Paracetamol / Acetaminophen
- NSAID’s
- ± Adjuvants

2, Pain 4 – 6

- Codeine
- Tramadol
- A / Codeine
- A / Hydrocodone
- A / Oxycodone
- A / Dihydrocodeine
- ± Adjuvants

3, Pain 7 – 10

- Morphine
- Hydromorphone
- Fentanyl
- Oxycodone
- Methadone
- Levophanol
- ± Adjuvants

## Commonly Used Oral/Transdermal Opioid Analgesics

<table>
<thead>
<tr>
<th>Opioid</th>
<th>Form</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fentanyl</strong> <em>(e.g., Actiq, Duragesic)</em></td>
<td>Transmucosal</td>
<td>200, 400, 600, 800, 1200, 1600 mcg</td>
</tr>
<tr>
<td></td>
<td>Transdermal Patches</td>
<td>12 (delivers 12.5), 25, 50, 75, 100 mcg</td>
</tr>
<tr>
<td><strong>Hydromorphone</strong> <em>(e.g., Dilaudid)</em></td>
<td>Oral Solution</td>
<td>1 mg/mL</td>
</tr>
<tr>
<td></td>
<td>Suppository</td>
<td>3 mg</td>
</tr>
<tr>
<td></td>
<td>Tablets (IR)</td>
<td>2, 4, 8 mg</td>
</tr>
<tr>
<td><strong>Methadone</strong></td>
<td>Oral Solution</td>
<td>1, 2, 10 mg/mL</td>
</tr>
<tr>
<td></td>
<td>Tablets</td>
<td>5, 10, 40 mg</td>
</tr>
<tr>
<td><strong>Morphine</strong> <em>(e.g., Avinza, Kadian, MS-Contin, MS-IR, Roxanol)</em></td>
<td>Oral Solution</td>
<td>2, 4, 20 mg/mL</td>
</tr>
<tr>
<td></td>
<td>Tablets (ER q 12 hrs)</td>
<td>15, 30, 60, 100, 200 mg</td>
</tr>
<tr>
<td></td>
<td>Tablets (ER q 24 hrs)</td>
<td>Kadian: 10, 20, 30, 50, 60, 80, 100, 150, 200 mg</td>
</tr>
<tr>
<td></td>
<td>Tablets IR</td>
<td>Avinza: 30, 45, 60, 75, 90, 120 mg</td>
</tr>
<tr>
<td><strong>Oxycodone</strong> <em>(e.g., OxyContin, Oxydose, OxyFAST, OxyIR, Roxicodone)</em></td>
<td>Oral Solution</td>
<td>1, 20 mg/mL</td>
</tr>
<tr>
<td></td>
<td>Tablets (ER q 12 hrs)</td>
<td>10, 15, 20, 30, 40, 60, 80 mg</td>
</tr>
<tr>
<td></td>
<td>Tablets (IR)</td>
<td>5, 10, 15 mg</td>
</tr>
<tr>
<td><strong>Oxymorphone (Opana)</strong></td>
<td>Tablets (ER q 12 hrs)</td>
<td>7.5, 10, 15, 20, 30, 40 mg</td>
</tr>
<tr>
<td></td>
<td>Tablets (IR)</td>
<td>5, 10 mg</td>
</tr>
</tbody>
</table>

IR = Immediate Release  
ER = Extended Release  

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## Consider Opioid Costs

### OPIOID COST RATIO CALCULATOR

**Parenteral Opioids**

<table>
<thead>
<tr>
<th>Parenteral Opioid</th>
<th>Equianalgesic Dose*</th>
<th>Quantity (1 Month Supply)</th>
<th>Relative Cost Index**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fentanyl</td>
<td>8.3 mcg/hr</td>
<td>50 mcg/mL - 2.5 x 50 mL</td>
<td>1.2</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>0.17 mg/hr</td>
<td>1 mg/mL - 2.5 x 50 mL</td>
<td>2.5</td>
</tr>
<tr>
<td>Methadone</td>
<td>0.28 mg/hr</td>
<td>1 mg/mL - 2 x 50 mL</td>
<td>8.7</td>
</tr>
<tr>
<td>Morphine</td>
<td>0.83 mg/hr</td>
<td>1 mg/mL - 12 x 50 mL</td>
<td>0.5</td>
</tr>
<tr>
<td>Sufentanil</td>
<td>0.7 mcg/hr</td>
<td>50 mcg/mL - 2 x 5 mL</td>
<td>2.4</td>
</tr>
</tbody>
</table>

**Oral/Transdermal Opioids**

<table>
<thead>
<tr>
<th>Oral/Transdermal Opioid</th>
<th>Equianalgesic Dose*</th>
<th>Quantity (1 Month Supply)</th>
<th>Relative Cost Index**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fentanyl</td>
<td>25 mcg q 72 hrs</td>
<td># 10 (Duragesic)</td>
<td>27.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td># 10 (generic)</td>
<td>4.4</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>2 mg q 4 hrs</td>
<td># 180 (generic-IR)</td>
<td>1.5</td>
</tr>
<tr>
<td>Methadone</td>
<td>7.5 mg q 8 hrs</td>
<td># 90 x 10mg (generic)</td>
<td>0.8</td>
</tr>
<tr>
<td>Morphine</td>
<td>10 mg q 4 hrs</td>
<td># 120 x 15mg (generic IR tabs)</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>10 mg q 4 hrs</td>
<td>90 mL (20 mg/mL elixir)</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>30 mg q 12 hrs</td>
<td># 60 (generic-ER)</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td># 60 (MS Contin)</td>
<td>16.1</td>
</tr>
<tr>
<td></td>
<td>60 mg q 24 hrs</td>
<td># 30 (Kadian)</td>
<td>23.3</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>20 mg q 12 hrs</td>
<td># 60 (OxyContin)</td>
<td>24.3</td>
</tr>
<tr>
<td>Oxymorphone</td>
<td>10 mg q 12 hrs</td>
<td># 60 (Opana)</td>
<td>24.1</td>
</tr>
</tbody>
</table>

*Equianalgesic dose relative to Morphine 10 mg PO q 4 h. **Relative cost in USA for a one-month supply as of January 2013 compared to Morphine PO.

Visit IPCRC.net to download a customizable Excel opioid cost ratio calculator.

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Dosing principles...
Immediate-release codeine, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, morphine, oxycodone, all follow first-order kinetics, e.g., steady-state serum drug concentrations change proportionally with dosing.

- For constant pain/symptom, dose once every half-life $t_{1/2}$; steady state is reached after 5 half-lives
- For breakthrough or intermittent acute pain/symptom, dose once every time to maximum concentration $t_{C_{max}}$ as needed:
  - PO/PR: provide 10% of 24 hrs dose q 60 min prn
  - SC/IV infusions: provide 50% of 1 hr dose q 30 min SC prn or q 15 min IV prn
- Once pain is controlled, convert routine doses to extended-release formulations

See Medication Kinetic Parameter cards for other $t_{C_{max}}$ and $t_{1/2}$

<table>
<thead>
<tr>
<th>Opioids</th>
<th>$t_{C_{max}}$</th>
<th>$t_{1/2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV:</td>
<td>15 min</td>
<td>4 hrs</td>
</tr>
<tr>
<td>SC/IM:</td>
<td>30 min</td>
<td>4 hrs</td>
</tr>
<tr>
<td>PO/PR:</td>
<td>60 min</td>
<td>4 hrs</td>
</tr>
</tbody>
</table>
First Order Kinetics

When biological effect follows plasma concentration

( most analgesics and medications used in palliative care )
Oral / Rectal Absorption

• Swallow / insertion
• Dissolution
• Absorption
• Pass through liver
• Mixing in circulation (3 x 2 minutes)
• Cross blood brain barrier
• Mix in CSF
• Reach opioid receptors in neuro-synaptic junctions
Plasma Concentration

Maximum Concentration ($C_{\text{max}}$) = maximum concentration & effect during the dosage interval

Plasma Concentration

Time (hours)

0  4
Plasma Concentration

Time to Maximum Concentration ($t_{C_{\text{max}}}$)

= time it takes to get to maximum concentration

Morphine PO / PR

$C_{\text{max}} = 1$ hour
Plasma Concentration

Half-Life ($t_{\frac{1}{2}}$)

= time it takes for the body to excrete half the dose

Morphine all routes

$t_{\frac{1}{2}} = 4$ hours
Constant pain...
oral & rectal dosing...
 Principle 1

For constant pain

- To achieve steady-state, dose routinely every half-life ($t_{\frac{1}{2}}$)
Dosing every half-life ($t_{1/2}$)

Oral morphine $= 4$ hours

Plasma Concentration

Time (hours)

0 4 8 12 16 20 24

50% 75% 87.5% 93.75% 97% 100%
Steady state after 5 half-lives
Morphine ≈ 20 hours

- Concentration needed to control pain
- Concentration where side-effects start to occur

Plasma Concentration

Peak

Trough

Time

0
Routine dosing...
Group 1
Analgesics...
Paracetamol / Acetaminophen

PO / PR...

Start = 325 mg every 4 hours
Maximum = 500 mg every 4 hours
( 3 gm / day )

$C_{max} = 1$ hour
$t_{\frac{1}{2}} = 4$ hours
Steady State $\approx 20$ hours
Ibuprofen PO / PR...

Start = 200 mg every 4 hours

Maximum = 600 mg every 4 hours

$C_{\text{max}} = 1$ hour

t $\frac{1}{2} = 4$ hours

Steady State $\approx 20$ hours
Group 2
Analgesics...
Tramadol PO...

Start = 50 mg every 6 hours

Maximum = 100 mg every 6 hours

$C_{max} = 2$ hour

t $\frac{1}{2} = 7$ hours

Steady State $\approx 30$ hours
Group 3
Analgesics...
Morphine Immediate-Release PO / PR...

- Start = Variable every 4 hours
- Maximum = None, titrate to effect

- $C_{\text{max}} = 1$ hour
- $t_{1/2} = 4$ hours
- Steady State $\approx 20$ hours
What dose to start with...
WHO Ladder

1, Pain 1 – 3
- ASA
- Paracetamol / Acetaminophen
- NSAID's
- ± Adjuvants

2, Pain 4 – 6
- Codeine
- Tramadol
- A / Codeine
- A / Hydrocodone
- A / Oxycodone
- A / Dihydrocodeine
- ± Adjuvants

3, Pain 7 – 10
- Morphine
- Hydromorphone
- Fentanyl
- Oxycodone
- Methadone
- Levorphanol
- ± Adjuvants

Starting Dose for Hector...

- Pain 8 / 10

Previous Analgesics

- Hydrocodone / Acetaminophen
  5 / 325: Two PO q 4 h
Question 2

• What is the equianalgesic dose of morphine equivalent to what he has been taking on a daily basis?

<table>
<thead>
<tr>
<th>60 mg morphine</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 mg morphine</td>
</tr>
<tr>
<td>10 mg morphine</td>
</tr>
</tbody>
</table>
Question 2

• What is the equianalgesic dose of morphine equivalent to what he has been taking on a daily basis?

  Green Card: 60 mg morphine CORRECT
  Pink Card: 30 mg morphine
  Yellow Card: 10 mg morphine
Question 2

• What is the equianalgesic dose of morphine equivalent to what he has been taking on a daily basis?

- 60 mg morphine
- 30 mg morphine
- 10 mg morphine
# Equianalgesic Dosing Guideline for Chronic Pain

## Changing Routes of Administration

<table>
<thead>
<tr>
<th></th>
<th>PO/PR</th>
<th>IV/SC/IM</th>
<th>Epidural</th>
<th>Intrathecal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio</td>
<td>3 :</td>
<td>1 :</td>
<td>0.1 :</td>
<td>0.01 :</td>
</tr>
</tbody>
</table>

## Methadone

### Daily Morphine Dose (mg/24 hrs PO)

<table>
<thead>
<tr>
<th>Morphine PO</th>
<th>Conversion Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100</td>
<td>3 : 1</td>
</tr>
<tr>
<td>101-300</td>
<td>5 : 1</td>
</tr>
<tr>
<td>301-600</td>
<td>10 : 1</td>
</tr>
<tr>
<td>601-800</td>
<td>12 : 1</td>
</tr>
<tr>
<td>801-1000</td>
<td>15 : 1</td>
</tr>
<tr>
<td>&gt;1001</td>
<td>20 : 1</td>
</tr>
</tbody>
</table>

## Methadone SC Dosing

1. Convert from daily Morphine Equivalent PO Dose/24 hrs to Methadone PO Dose/24 hrs using the Methadone PO Dosing Table above
2. Then + 3 to convert to Methadone SC Dose/24 hrs

## Adjusting for Incomplete Cross Tolerance

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>100%</td>
</tr>
<tr>
<td>Moderate</td>
<td>75%</td>
</tr>
<tr>
<td>Excellent</td>
<td>50%</td>
</tr>
</tbody>
</table>

---

*1000 mcg = 1 mg; must convert to mg to calculate equianalgesic dose

---

Ferris FD and Pirrello RD: Improving Equianalgesic Dosing for Chronic Pain Management, American Association for Cancer Education Annual Meeting, oral presentation, Cincinnati, Ohio, September 2005

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# Equianalgesic Dosing

<table>
<thead>
<tr>
<th>Medication</th>
<th>Oral Morphine Equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicodin 5 / 325</td>
<td>5 mg + 1-2 mg ≈ 6-7 mg</td>
</tr>
<tr>
<td>Hydrocodone 5 mg</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen 325 mg</td>
<td></td>
</tr>
<tr>
<td>Percocet 5 / 325</td>
<td>7.5 mg + 1-2 mg ≈ 9 mg</td>
</tr>
<tr>
<td>Oxycodone 5 mg</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen 325 mg</td>
<td></td>
</tr>
</tbody>
</table>
Calculation for Hector

• 2 Vicodin every 4 hours
  2 pills x 6 times per day x 5 mg
  = 60 mg hydrocodone

• From Table
  15 mg hydrocodone = 15 mg morphine
...Starting Dose for Hector

Previous Analgesics

• **Double** equianalgesic dose of morphine

  = Hydrocodone 60 mg / 24 hour
  = Morphine 60 mg PO / 24 hour

**Doubled** = 120 mg PO / 24 hour

≈ Morphine 20 mg PO q 4 h
Controlling Extra / Breakthrough Pain...
Analgesia follows plasma concentration...
Time to Maximum Concentration ($t_{\text{Cmax}}$)

= time it takes to get to maximum concentration & effect

C$_{\text{max}}$ = 1 hour
Principle 2

For extra or breakthrough pain, provide an extra PO dose PRN

• 10% total routine dose in 24 hours

• Offer every \( t_{\text{Cmax}} \) PRN, patient may refuse

• PO / PR = q 60 minutes PRN

• Do NOT use extended-release opioids
Extra dose PRN at $t_{C_{max}}$...
Extra PRN Dose for Hector

Routine Dose

• Morphine 20 mg PO q 4 h
  Total dose in 24 hours = 120 mg
  10% = 12 mg

PRN Dose

• Morphine 10 mg PO q 1 h PRN
Questions before next breakthrough dose

1. Did you record the last dose?
2. Pain severity now?
3. Any effects you didn’t like?

Report to nurse / doctor
## Opioid side effects

<table>
<thead>
<tr>
<th>Common</th>
<th>Uncommon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constipation</td>
<td>Bad dreams / hallucinations</td>
</tr>
<tr>
<td>Dry mouth</td>
<td>Dysphoria / delirium</td>
</tr>
<tr>
<td>Nausea / vomiting</td>
<td>Myoclonus / seizures</td>
</tr>
<tr>
<td>Sedation</td>
<td>Pruritus / urticaria</td>
</tr>
<tr>
<td>Sweats</td>
<td>Respiratory depression</td>
</tr>
<tr>
<td></td>
<td>Urinary retention</td>
</tr>
</tbody>
</table>
Dosing by the clock...
20 mg q 4 h routinely
+ 10 mg q 1 h PRN

18:00
14:00 = 20 mg + 10 mg
13:00 = 10 mg
12:00 = 10 mg
11:00 = 10 mg
10:00 = 20 mg
6:00
24:00
### Pain Diary

<table>
<thead>
<tr>
<th>Time</th>
<th>Severity</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00</td>
<td>8</td>
<td>20 mg</td>
</tr>
<tr>
<td>11:00</td>
<td>6</td>
<td>10 mg</td>
</tr>
<tr>
<td>12:00</td>
<td>5</td>
<td>10 mg</td>
</tr>
<tr>
<td>13:00</td>
<td>5</td>
<td>10 mg</td>
</tr>
<tr>
<td>14:00</td>
<td>6</td>
<td>20 + 10 mg</td>
</tr>
</tbody>
</table>
Sleeping a Lot

How to differentiate

• Catching up on sleeplessness

or

• Excess medication (overdose)
Titrating using the ‘catch-up’ technique to get good pain control...

Safest technique possible...
Day 1 Followup

Now: Pain 6 / 10, No side-effects

Morphine Use Last 24 hours

Routine = 20 mg x 6 doses = 120 mg
Extra = 10 mg x 12 doses = 120 mg
Total use = 240 mg

New Rx

Routine = 240 mg / 6 = MS IR 40 mg q4h +
Extra = 10 % 240 mg ≈ MS IR 20 mg q1h PRN
Day 2 Followup

Now: Pain 4 / 10, No side-effects

Morphine Use Last 24 hours

Routine = 40 mg x 6 doses = 240 mg
Extra = 20 mg x 2 doses = 40 mg
Total use = 280 mg

New Rx

Routine = 280 mg / 6 \approx MS IR 40 mg q4h +
Extra = 10 \% 280 mg \approx MS IR 30 mg q1h PRN
Dosing at bedtime to avoid waking at night...
Double Dose of Morphine IR at Bedtime

Morphine IR
80 mg PO qhs

Sleep through the 02:00 dose without pain

Morphine IR
40 mg PO q4h while awake
Extended-release preparations...
Morphine ER q12h

Plasma Concentration

Morphine ER
120 mg PO q12h
Routine oral dosing…
Extended-release preparations

• Less frequent dosing
• Improve compliance, adherence
• Dose interval q 12 h

  Don’t crush or chew tablets

• Adjust dose every $5 \times 12 = 60$ hours
  $= q 2 - 3$ days
Morphine Extended-Release PO / PR...

Start = Based on demonstrated use

Maximum = None, titrate to effect

$C_{\text{max}} = 2-3 \text{ hour}$

Dose q 12 hours

Steady State $\approx 60$ hours
Day 3 Followup

Now: Pain 2 / 10, No side-effects

Morphine Use Last 24 hours

Routine = 40 mg x 6 doses = 240 mg
Extra = 30 mg x 1 doses = 30 mg
Total use = 270 mg

New Rx

Routine = 270 mg / 2 ≈ 135 mg q 12h
Rx: MS ER 120 mg (2 x 60mg) q12h +
Extra = 10 % 270 mg ≈ MS IR 30 mg q1h PRN
Clearance concerns
Morphine

Liver

- MS → M3G ............. +
- M6G ............. ++++

Analgesia          CNS

Urine
90 – 95 %

- If dehydration, renal failure, dying:
  Oliguria < 500 ml / 24 hour
  ↓ routine dose by 50 %
  < 250 ml / 24 hour or anuria
  stop routine dose, continue PRN dosing

Addiction . . .

- psychological dependence
- compulsive use
- loss of control over drugs
- loss of interest in pleasurable activities
Addiction

- continued use of drugs in spite of harm
- a rare outcome of pain management
  particularly, if no history of substance abuse
Tolerance

- reduced effectiveness to a given dose over time
- not clinically significant with chronic dosing
- if dose is increasing, suspect disease progression
Physical Dependence

• a process of neuro adaptation
• abrupt withdrawal may cause abstinence syndrome
• if dose reduction required (cancer is better), reduce by 50% q 2–3 days
avoid antagonists
Question 3

- Which of the following DOES NOT result in an abstinence syndrome when abruptly stopped:

  - Citalopram
  - Estrogen
  - Ibuprofen
Question 3

• Which of the following DOES NOT result in an abstinence syndrome when abruptly stopped:
  
  Citalopram
  
  Estrogen
  
  Ibuprofen
Aberrant Drug Taking Behavior

- Spectrum
  - Self-Titration
  - Anxiety Relief
  - Borrowing from someone else
  - Buying it From Street
  - Selling
Question 4

• A patient with Lung Cancer metastatic to bone and liver has been taking SR Morphine 120 mg twice daily and IR Morphine 15 mg q 1 h prn. She has run out of Morphine IR. This is most likely:

Addiction

Poorly controlled pain

Aberrant Drug Taking Behavior
Question 4

- A patient with Lung Cancer metastatic to bone and liver has been taking SR Morphine 120 mg twice daily and IR Morphine 15 mg q 1 h prn. She has run out of Morphine IR. This is most likely Addiction, Poorly controlled pain, Aberrant Drug Taking Behavior.
Question 5

• A woman with advanced cervical cancer has deep pelvic pain, 8/10. SR Morphine 120 mg bid and IR morphine 30 mg po q1h were filled 4 days ago. She calls because she is ‘out’.

• This is most likely:

- Addiction
- Poorly controlled pain
- Aberrant Drug Taking Behavior
Question 5

• A woman with advanced cervical cancer has deep pelvic pain, 8/10. SR Morphine 120 mg bid and IR morphine 30 mg po q1h were filled 4 days ago. She calls because she is ‘out’.

• This is most likely:
  
  Green Card: Addiction

  Pink Card: Poorly controlled pain

  Yellow Card: Aberrant Drug
Diversion

• Opioids appropriately prescribed are diverted for other use
  Sell to raise money
  Someone else uses
    for medical use
    for non-medical use (get high)

• Most common issue
Diversion

- Counsel Patients
  - Keep medications locked up in safe place
  - NOT in medicine cabinet
  - NOT on bedside stand or kitchen table
  - Entrust to caregiver if patient not mobile
Question 6: Adjuvants

- Bone Pain (Inflammatory)
  - Ibuprofen
  - Gabapentin
  - Lorazepam
Question 6: Adjuvants

• Bone Pain (Inflammatory)

  Ibuprofen
  Gabapentin
  Lorazepam
Question 7: Adjuvants

- Burning Pain (Neuropathic)

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Question 7: Adjuvants

- Burning Pain (Neuropathic)
  - Ibuprofen
  - Gabapentin
  - Lorazepam
Gandhi... You need to be the change you want to see in the world...
Palliative Care
Interdisciplinary Curriculum

A Joint Initiative of the
Palliative Medicine Faculty & Staff of

OhioHealth
THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER
NATIONWIDE CHILDREN'S

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