CHAMP: Bedside Teaching

OPIATE CONVERSION

Stacie Levine MD

Teaching Trigger:

Patient’s pain regimen needs to be changed to a different opiate.

Clinical Question:

How do you convert opiates?

Teaching Points:

1) Opiate conversion table can be used to convert from one opiate to another and to change routes of administration. See below.
2) When changing to a different opiate that is new to the patient it is important to correct for incomplete cross tolerance by decreasing new dose by 25-50%
3) When changing to Fentanyl patch it is easiest to find oral morphine equivalency and divide by 2 (e.g. Morphine 300 mg po/day = 150 mcg Fentanyl patch). See below.
4) The conversion ratio of Morphine to Methadone changes as the dose of Morphine equivalent gets larger. Only persons with experience should be using Methadone.
5) Do not forget an appropriate bowel regimen when starting opioid therapy. See below.
OPIOID ANALGESIC EQUIVALENCIES AS COMPARED TO MORPHINE

<table>
<thead>
<tr>
<th>Opioid Agonists</th>
<th>SC/IV mg</th>
<th>Oral/Rectal mg</th>
<th>Duration of effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>5</td>
<td>15</td>
<td>3 - 4 hours</td>
</tr>
<tr>
<td>LA Morphine</td>
<td>15</td>
<td></td>
<td>8 - 12 hours</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>10</td>
<td></td>
<td>3 - 4 hours</td>
</tr>
<tr>
<td>LA Oxycodone</td>
<td>10</td>
<td></td>
<td>8 - 12 hours</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>0.75 - 1.5</td>
<td>4</td>
<td>3 - 4 hours</td>
</tr>
<tr>
<td>Methadone</td>
<td>5</td>
<td>10</td>
<td>4 - 8 hours</td>
</tr>
<tr>
<td>(1)(2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meperidine (3)</td>
<td>50</td>
<td>150</td>
<td>2 - 3 hours</td>
</tr>
<tr>
<td>Codeine</td>
<td>50</td>
<td>100</td>
<td>3 - 4 hours</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td></td>
<td>15</td>
<td>3 - 4 hours</td>
</tr>
</tbody>
</table>

(1) Long and variable half-life (12-60 hours). Symptoms of overdose may be delayed 3-7 days after starting or increasing dose. Dose conversion on table reflects use in acute or one-time dose setting and should not be used when patient is chronically on higher doses of morphine equivalent

(2) When changing to methadone from higher doses of morphine the ratio of methadone:morphine changes: Morphine < 90 mg (1:5); 91-300 mg (1:10); >300 mg (1:20)

(3) Should not be used long term or in high doses because of CNS toxic metabolites.

LA = Long Acting

CONVERTING TO TRANSDERMAL FENTANYL
1) Determine 24 hour parenteral morphine equivalent
2) Patch duration of effect = 48-72 hours
3) It takes 12-24 hours before full analgesic effect of patch occurs after application
4) Must prescribe short acting opioid for breakthrough pain
5) Increase dose of patch based on the average amount of short acting opioid used for breakthrough pain in the previous 72 hours

<table>
<thead>
<tr>
<th>PARENTERAL MORPHINE EQUIVALENT (mg/24 hrs)</th>
<th>TRANSDERMAL FENTANYL EQUIVALENT (micrograms/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 – 22</td>
<td>25</td>
</tr>
<tr>
<td>23 – 37</td>
<td>50</td>
</tr>
<tr>
<td>38 – 52</td>
<td>75</td>
</tr>
<tr>
<td>53 – 67</td>
<td>100</td>
</tr>
<tr>
<td>68 – 82</td>
<td>125</td>
</tr>
<tr>
<td>83 – 97</td>
<td>150</td>
</tr>
</tbody>
</table>

Or: Calculate po morphine equivalent and divide by 2.
Example: morphine 100 mg po = transdermal fentanyl 50 mcg
**BOWEL REGIMEN**

Do not start opioid therapy without an appropriate bowel regimen (softener and stimulant!)
Tritrate regimen to one soft BM every one to two days

Prevention: Docusate 100 mg bid plus Senna 1 tab bid plus dulcolax prn
Titration: Docusate 100mg bid plus Senna 2 tabs bid plus dulcolax bid
If no result: Above plus MOM 30cc or mineral oil 30cc once or twice a day
Or lactulose or sorbitol 30 cc po bid
Or citrate of magnesia 8 ounces po qd
If no BM by 4 days enemas should be administered (be aware of possibility of fecal impaction)

**Conversion Rules:**

1) Assess pain using pain scale. If a patient is unable to communicate about pain use behavioral cues. Reassess pain frequently (within hours) after initiating treatment, sooner if severe.

2) Short acting strong opiates (morphine, hydromorphone, oxycodone) should be used to treat moderate to severe pain. Long acting strong opiates (Oxycontin, MS Contin, Fentanyl patch) should be started once pain is controlled on short acting preparations. Never start an opiate naïve patient on long acting medications.

3) Titrate the opiate dose upward if pain is worsening or inadequately controlled:
   - Increase dose by 25-50% if mild to moderate pain
   - Increase dose by 50-100% if moderate to severe pain

4) Manage breakthrough pain with short-acting opiates. Dose should be 10% of total daily around the clock dose (e.g. MS Contin 100 mg po q 8 = 300 mg/24 hours; breakthrough = 10% of 300 mg =30 mg).

5) Breakthrough doses can be given as often as every 60 min if po, 30 min if SQ, and 15 min if IV if the patient has normal hepatic and renal function. If the patient has impaired metabolic function either decrease the dose or extend the interval.

6) When converting patient from one opiate to another decrease the dose of the second opiate by 25-50% to correct for incomplete cross-tolerance

7) Manage opiate side effects aggressively. Constipation should be treated prophylactically (see above).

**Conversion Examples:**

1) Patient on 4 mg/hr IV Morphine. Convert to MS Contin with breakthrough.
   4 mg X 24 = 96 mg IV/day, 96 X 3 (to convert to po) = 288 mg po daily or 100 mg po q 8 hr ATC
   Breakthrough = 10% of 300 mg = 30 mg po q 1 hour prn.

2) Patient on Hydromorphone 2 mg po q 4 hrs. Convert to Oxycontin.
   2 mg X 6 = 12 mg po/day, 12/X = 4/10 (conversion ratio) = 30 mg po = Oxycontin 10 mg po q 8

3) Patient on Morphine 30 mg po q 4 hr. Convert to Hydromorphone IV.
   30 mg X 6 = 180 mg po/day, 180/X = 15/1.5 (conversion ratio) = 18 mg IV
   Hydromorphone/day = 3 mg IV q 4 hr

4) Patient on Oxycontin 40 mg po q 8. Convert to transdermal Fentanyl.
40 mg X 3 = 120mg po/day, Convert to po morphine = 120 mg /X = 10/15 (conversion ratio) = 180 mg morphine po/day. Divide by 2 = roughly 100 mcg patch (or 75 mcg when correcting for incomplete cross-tolerance).