Pain Module

Section 2 Treatment
Pharmacologic: Opioids
Opioid Therapy

• Indicated for patients with moderate-to-severe medical or surgical pain and pain related to cancer, AIDS, or other life-threatening illness.

• Aside from the potential risk of respiratory depression during the initial dosing of these drugs, opioids cause less morbidity and mortality than do the non-opioid class of analgesics e.g., acetaminophen and NSAIDS.
Opioids

- Should be individually tailored....no one drug or dose works or is safe for everyone.
- Know the patient’s past experience with opioids.
- Start low and go slow especially in opioid-naïve and older persons.
- The PO route is preferred when possible. The IV route is better when initially treating severe, escalating pain because this route allows for rapid titration.
- Do not administer opioids in combination with other medications e.g., benzodiazepines, antihistamines, diphenhydramine, sedatives or other central nervous system depressants.
- Slow-release, time-release, controlled release tablets e.g., OxyContin, MSContin, should be swallowed whole and are not to be broken, chewed, dissolved, or crushed. Taking broken, chewed, dissolved, or crushed slow-release pills can lead to rapid release and absorption of a potentially fatal dose of the drug.
- Patients should be started on a bowel management with the first dose of an opioid; otherwise constipation can become a serious problem.
Some Opioid Examples

- **Morphine** (metabolites, glucuronide, may cause myoclonus, confusion and hallucinations in the elderly)
- **Vicodin** (hydrocodone & acetaminophen)
- **Percocet** (oxycodone & acetaminophen)
- **Fentanyl** (IV form, patch, oralet, buccal patch)
- **Oxycodone** (*OxyContin*) (same drug that is in Percocet but without the acetaminophen)
- **Hydromorphone** (*Dilaudid*)
- **Tapentadol*** (Nucynta & Nucynta Extended Release)

*New drug--Tapentadol is an opioid with both opioid and nonopioid activity. The drug binds to opioid receptors and also inhibits the reuptake of the neurotransmitter norepinephrine. The dual mechanism of action inhibits the transmission of pain signals in both the ascending and descending pathways.*
The following opioids are not recommended by pain experts and national guidelines:

- **Meperidine** (Demerol)—Poor absorption and toxic metabolite that causes tremors, anxiety, & seizures with repetitive dosing. Drug has been removed from most hospital formularies.

- **Propoxyphene** (Darvocet-type drugs)—Poor efficacy and toxic metabolite that can cause convulsions and fatal heart rhythm abnormalities with repetitive dosing. Drug has been removed from the market.

- **Codeine**—Unpredictable absorption, high incidence of nausea and sedation, and the normal dose is no more effective than aspirin. Has a “ceiling effect” (Giving higher doses does not help and causes increased side-effects).
Mixed agonist-antagonists
pentazocine (Talwin), butorphanol (Stadol), nalbuphine (Nubain), dezocine (Dalgan)

• Can cause withdrawal symptoms in pts who have been on opioids because of the antagonist action of the drugs.
• Drugs have a “ceiling effect”.
• May cause confusion and hallucinations in older pts and those with renal impairment.
Some Routes of Administration

• IM administration:
  – Painful
  – May cause fibrosis
  – Unpredictable absorption
  – Indicated in an emergency when no other route is available

• IV & Transmucosal administration:
  – Painless
  – Quick onset of analgesia
  – Total dose delivered
  – Can titrate to effect easily
  – Used for procedures & acute pain mgmt for NPO patient

• PO & Transdermal administration
  – Painless
  – Convenient
  – Requires no special device or equipment
  – Steady blood levels produced
  – Long-acting forms available
Sample Equianalgesic Table

<table>
<thead>
<tr>
<th>DRUG</th>
<th>Approximate EQUIANALGESIC DOSE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>30 mg</td>
<td>3-4 hours</td>
</tr>
<tr>
<td>IM/SQ/IV</td>
<td>10 mg</td>
<td></td>
</tr>
<tr>
<td>Hydromorphone (Dilaudid)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>4.5-7.5 mg</td>
<td>2-4 hours</td>
</tr>
<tr>
<td>Parenteral</td>
<td>1.5 mg</td>
<td></td>
</tr>
<tr>
<td>Oxycodone Oral</td>
<td>15-20 mg</td>
<td>3-4 hours</td>
</tr>
<tr>
<td>Hydrocodone Oral</td>
<td>30 mg</td>
<td>3-4 hours</td>
</tr>
</tbody>
</table>

e.g., Dilaudid 1.5mg IV is equivalent to morphine 10mg IV.
Note the differences between oral and parenteral doses in potency.
Use caution when using equianalgesic charts

• Equianalgesic chart doses are NOT suggested starting doses.

• Doses reflect averages only!!!
  – There is wide variability from person to person as to how a drug affects an individual.
  – When switching from one opioid to another, or to a different route, start with 50% of the equianalgesic dose because the pt may be more sensitive to the new drug or respond differently because of the route of administration.
    – Consider past experience with opioids or a particular drug/route.
    – Assess patient carefully.
Dilaudid

1.5 mg IV of Dilaudid (HYDROMorphine) = 10 mg IV of Morphine

Risk Control Strategies for Reducing Patient Harm

• Differentiate HYDROmorphe from morphine where both products are available (use tall man lettering on labels, order sets, order entry screens, medication administration records, etc.).

• Limit the number of strengths available. Avoid stocking HYDROmorphe injection in prefilled syringes in the same strength as morphine prefilled syringes.

• Include the brand name Dilaudid on order sets, order entry screens, medication administration records, etc., to help differentiate HYDROmorphe from morphine. Employ technology to alert practitioners regarding opioids (e.g., barcode medication verification, hard stops in smart infusion pump libraries for catastrophic doses).

• Display equianalgesic dosing charts in patient care areas, in computerized prescriber order entry systems and pharmacy information systems, and on medication administration records.

• Limit the starting doses of HYDROmorphe to 0.5 mg for opioid-naïve patients and those at risk for respiratory depression (obesity, asthma, obstructive sleep apnea).
Some Possible Side-Effects of Opioids

• **Initial:**
  – Respiratory depression (see separate module on Opioid-Related Respiratory Depression)
  – Sedation
  – Nausea & Vomiting*
  – Pruritis
  – Headache
  – Sweating
  – Urinary retention and pruritis (mainly associated with spinal opioids)
  – Myoclonus and seizures (initial and long term use—due to accumulation of toxic metabolites, especially in elderly and pts with renal clearance issues)

• **Long term use:**
  – tolerance, hyperalgesia (increased pain sensitivity), hormonal effects (decreased testosterone levels, decreased libido and sex drive, irregular menses), depression, impaired sleep patterns and suppression of the immune system.

• **NOTE:** Constipation typically begins with first dose and continues as long as the opioid is taken. *

*see separate module on side-effects of opioids
The following may be signs that a person is being harmed more than helped by pain medication.

- sleeping too much or having days and nights confused
- decrease in appetite
- inability to concentrate or short attention span
- mood swings (especially irritability)
- lack of involvement with others
- difficulty functioning due to drug effects
- use of drugs to regress rather than to facilitate involvement in life
- lack of attention to appearance and hygiene
Major References for this Section
