General Principles of Pain Management and Opioid Prescribing

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Objectives

- Become familiar with Texas Law regarding pain management
- Understand assessment and classification of pain
- Review algorithm for staged pain management
- Know indications for commonly used non-opioid and opioid analgesics
- Review opioid conversion examples of multiple opioids
- Become familiar with opioid side effects

Medical-Legal Aspect of Pain Management
Pre-Test Questions

1. Which of the following is NOT part of the Texas Medical Board guidelines?
   A. Suggested maximum dose limit for each opioid
   B. Prevention of over treatment of pain
   C. Prevention of under treatment of pain
   D. Documentation of medical necessity for prescription of opioids
   E. The need to address psychosocial aspect of pain

Pre-Test Questions

2. Which of the following is FALSE regarding pseudoaddiction?
   A. Patients with pseudoaddiction may behave the same way as patients with addiction
   B. Pseudoaddiction resolves upon institution of effective analgesic therapy
   C. Urine drug screen is ineffective for distinguishing addiction from pseudoaddiction
   D. It occurs in patients who are overtreated
   E. None of the above

Pre-Test Questions

3. The definition of "chronic" pain is pain lasting greater than:
   A. 1 month
   B. 3 months
   C. 4 months
   D. 6 months
   E. 12 months
Pre-Test Questions
4. Neuropathic pain is described as:
   A. Burning  
   B. Itching  
   C. Electrical shock  
   D. Tingling  
   E. All the above  
   F. None of the above

Pre-Test Questions
5. Which of the following opioids is thought to be useful for the treatment of neuropathic pain?
   A. Fentanyl  
   B. Hydrocodone  
   C. Hydromorphone  
   D. Methadone  
   E. Morphine  
   F. Oxycodone  
   G. None of the above

Pre-Test Questions
6. A patient who has been prescribed an ibuprofen for mild-moderate knee pain due to arthritis, but states that it does not help. You decide to try a different NSAID. Which of the following would you not choose?
   A. Celecoxib  
   B. Diclofenac  
   C. Etodolac  
   D. Meloxicam  
   E. Naproxen
Pre-Test Questions

7. Which of the following is true about opioids?
   A. There are no published guidelines for the maximum dose for each opioid
   B. Short acting opioids should never be used in chronic pain due to risk of addiction
   C. Patients with chronic pain should only be prescribed long acting opioids
   D. Long-acting opioids minimize euphoric effects and do not result in addiction

8. Your patient is on morphine 4 mg IV Q4 hours PRN for post-operative pain. He only requests the morphine about 4 times a day and is well controlled. You plan to discharge him home tomorrow with hydrocodone. What is the most appropriate dosing?
   A. Hydrocodone/acetaminophen 10/325 two tablets PO Q6 hours PRN
   B. Hydrocodone/acetaminophen 10/325 one tablet PO Q6 hours PRN
   C. Hydrocodone/acetaminophen 7.5/500 one tablet PO Q6 hours PRN
   D. Hydrocodone/acetaminophen 5/500 one tablet PO Q6 hours PRN

9. Which of the following is false regarding transdermal fentanyl patch?
   A. Most common adverse effect is local skin reaction
   B. It is not appropriate for acute post-surgical pain
   C. It is especially effective in cachectic cancer patients
   D. It is difficult to convert to and from other opioids
   E. All of the above
   F. None of the above
Pre-Test Questions
10. Your patient on a hydromorphone PCA says to you, "My pain is better but I can't calm down and rest. I'm jittery and I feel like something bad is going to happen any minute." Your first response should be:
A. Consult psychiatry
B. Start a benzodiazepine for anxiety.
C. The patient should be switched to another medication due to opioid toxicity
D. Continue hydromorphone PCA and reassure the patient that this is a common transient side effect
E. Add an adjunctive agent for neuropathic pain

Pre-Test Questions
11. A patient develops a pruritic rash after taking morphine, but otherwise seems stable. What should you do?
A. Stop morphine and treat with epinephrine as it may develop into an anaphylactic reaction
B. Document that patient has a morphine allergy in their medical record
C. Treat with diphenhydramine and premedicate before subsequent doses
D. A and B
E. B and C

Pre-Test Questions
12. Tolerance does NOT develop for which of the following side effects of opioids after chronic use?
A. Nausea
B. Constipation
C. Sedation
D. All of the above
E. None of the above
**Patient Perception**

- Patients expect their pain will be relieved or ameliorated
- Texas Medical Board published guidelines in 2007 that require physicians to treat pain
  - Including use of opiates
  - Prevention of under treatment
  - Prevention of over treatment
  - Specific documentation requirements

**Texas Medical Board Expectations**

- Patients deserve to have medical treatment for pain, whether acute or chronic, mild or severe
- Goal of pain management to treat patient’s pain in relation to overall health, including physical function, psychological, social, and work-related factors
- Drugs, including opiates, essential tools for treatment of pain

**Texas Medical Board Documentation of Pain**

- Medical history and problem-focused exam
  - Nature and intensity of pain
  - Success level of current and past treatments, including OTC and supplements, as well as opioids
  - Underlying/coexisting conditions
  - Effect on physical and psychological function
  - History and potential for substance abuse
- Medical indication
- Treatment objective and informed consent
- Reassessment of patient’s pain and functioning following any therapeutic intervention
Potential Harm

- Harm can result when physician does not use sound clinical judgment in using drug therapy
- Failure to apply sufficient drug therapy (under treatment) results in:
  - Ongoing suffering from pain
  - Relief-seeking behavior, known as pseudoaddiction
- Non-therapeutic drug therapy (over treatment) may contribute to:
  - Abuse
  - Addiction
  - Diversion

“Pseudoaddiction”

- Iatrogenic syndrome
- Seen in patients with undertreated pain
- Misinterpretation of relief seeking behaviors as drug-seeking behaviors commonly seen with addiction
- KEY POINT:
  - Relief seeking behaviors resolve upon institution of effective analgesic therapy

Fear of Disciplinary Action?

- “Physicians should not fear board action if they provide proper pain treatment.”
- Proper pain treatment is not a matter of how much drug therapy is used, as long as that therapy is based on sound clinical judgment.
The Conundrum for Clinicians

- Chronic Pain is a...
  Symptom/Condition/Disorder/Disease???
  - It requires a very flexible viewpoint from the standpoint of understanding the mechanisms and treatment effects
  - Academically, we still are a long way from understanding the pathophysiology

- BUT...
  - The public expects us to build and monitor boundaries around our treatment plans because opioids are perceived as dangerous drugs

Pain Assessment

Pain Assessment Tools

- Simple, reliable, brief, and sensitive to changes in pain intensity
- Commonly used scales
  - Numerical pain rating scales (VAS)
  - Picture-based scale (Wong-Baker Faces)
    - Language barrier
    - Pediatric patient population
Classification of Pain

- Time Duration
  - Acute pain
  - Chronic pain
- Physiological
  - Nociceptive
  - Neuropathic
  - Mixed type

Acute Versus Chronic Pain

- Acute pain
  - <3-6 months
  - Identifiable pathology (e.g. post-operative pain)
  - Treatment typically with analgesics
  - Avoid medications that cannot be rapidly titrated (e.g. Fentanyl patch, methadone PO)
- Chronic pain
  - >6 months
  - Pathology may be unclear
  - Treatment typically needs to be multidisciplinary
  - Can experience acute pain (acute crisis or new etiology)

Identify Pain Type

- Nociceptive pain
  - Activation of peripheral pain receptors
  - Includes somatic and visceral pain
  - Frequently, responsive to NSAIDS, opioids
- Neuropathic pain
  - Aberrant signal processing by peripheral or central nervous system
  - Due to nerve degeneration (e.g., multiple sclerosis, diabetes, stroke, chemotherapy), pressure/inflammation (e.g., herniated disc, nerve entrapment), or infection (e.g., shingles)
  - Often does not respond to opioids
- Mixed type pain – both nociceptive and neuropathic
Common Pain Descriptions

- Nociceptive pain
  - Somatic
    - Well localized, reproducible
    - Sharp
    - Stabbing
    - Pressure
  - Visceral
    - Poorly localized
    - Discomfort
    - Cramp-like

- Neuropathic pain
  - Burning
  - Tingling
  - Pins and needles
  - Electrical shock
  - Cold
  - Itching

Treatment Principles and Methods

- Maximize Non-Pharmacologic Therapy
  - Optimize consultations with relevant disciplines
  - Treat psychological distress associated with pain
    - Insomnia, depression, anxiety
  - Improve physical function and prevent deconditioning
  - Consider incorporating behavioral modifications
    - Relaxation
    - Biofeedback
    - Acupuncture
WHO Analgesic Ladder

- Developed in 1986 for cancer pain
- No randomized control trials to validate effectiveness
- Widely applicable as a general guide to pain management
  - Should NOT be rigidly followed

**Step 1:** Non-opioids
 +/- adjuvants

**Step 2:** Opioids for mild to moderate pain
 +/- non-opioid; +/- adjuvants*

**Step 3:** Opioids for moderate to severe pain
 +/- non-opioid; +/- adjuvants*

*Adjuvants: Antiemetics, laxatives, antidiarrheal agents, antidepressants, anxiolytics

Chronic Pain
Non-Renal 3 months

Neuropathic
- Tricyclics
- Duloxetine
- Pregabalin
- Capsaicin
- Long Acting Opioids
- Short Acting Opioid – Break-through
- Injections - Epidurals
- Nerve Blockade
- Nerve Ablation
- Spinal Cord Stimulator
- Pain Pumps

Pain: Nociceptive
Bone Pain, Metastatic Disease, Dysmenorrhea, Pancreatitis
RA, PAD, Tumors
- NSAID, ASA
- Acetaminophen
- Chondroitin
- Exercise Assessment plan
- PT
- Long acting Opioids
- Injections (spine OA)
- Acupuncture

Pain: Mixed
Chronic LBP, Neck and back radiculopathies, chronic migraine, fibromyalgia
- Tricyclics
- Anticonvulsants
- Short Acting Opioid – Break-through
- Exercise Assessment
- PT

Pain: Neuropathic
Phantom limb, HIV sensory neuropathy, MS, Post CVA, PHN, DPN, CRPS
- Tricyclics
- Duloxetine
- Pregabalin
- Capsaicin
- Long Acting Opioid
- Short Acting Opioid – Break through
- Injections - Epidurals
- Nerve Blockade
- Nerve Ablation
- Spinal Cord Stimulator
- Pain Pumps
- Long Acting Opioids
- Short Acting Opioid – Break through
- Tramadol
- Re-eval- MR, EMG etc
- Re-eval-trial blocks

Institute Analgesics
Sequentially...Not Concomitantly

- Non-opioid analgesics are first-line for most non-malignant pain syndromes
  - NSAIDs should be used with caution in elderly

- Adjuvant drugs for neuropathic pain, such as tricyclic antidepressants and anticonvulsants, may be considered as initial therapy for obvious cases of neuropathic pain
One Size Does Not Fit All

- Drug therapies must be individualized
- Drug substitution within a class should be considered before determining an entire class ineffective or intolerable
  - Includes opioids as well as other drug classes
- Discontinue medications that do not provide pain relief or contribute to treatment goal

Non-opioid Analgesics

- Acetaminophen
  - Calculate total daily dose and evaluate overdose risk
  - Maximum 4 grams/day or 1 gram every Q6 hours
  - Maximum 2 grams/day in patients with liver disease or elderly
- NSAIDs
  - Anti-inflammatory affect
  - Use minimum effective dose to decrease risk for GI ulceration and bleeding

Classes of NSAIDs

- Salicylates
  - Aspirin
- Propionic acids derivatives
  - Ibuprofen
  - Naproxen
- Enolic acid derivatives
  - Meloxicam
- Acetic acids derivatives
  - Indomethacin
  - Etodolac
  - Diclofenac
  - Ketorolac
- Selective COX-2 inhibitors
  - Celecoxib
Treatment of Neuropathic Pain

- Often overlooked
- Proper treatment of neuropathic pain may reduce or eliminate need for opioids

Treatment options
- TCA (e.g. amitriptyline, nortriptyline)
- SNRIs (e.g. duloxetine, venlafaxine)
- Antiepileptics (e.g. gabapentin, pregabalin, topiramate)
- Counter-irritants (e.g. capsaicin cream)
- Anesthetics (e.g. lidocaine patch)

Opioid Analgesics

- Tramadol
  - Mu opioid receptor agonist like other opioids
  - Has abuse potential contrary to popular belief
  - In addition:
    - Stimulates serotonin release
    - Inhibits norepinephrine reuptake
    - NMDA receptor antagonist
  - Useful for mixed type nociceptive and neuropathic pain
  - JPS formulary
    - 50mg tablets, 1-2 tab PO q4-6h prn, max 400mg/day
    - Max 300mg/day if >75yo
    - Extended-release formulation (100, 200mg) not available
    - Also available in combination with acetaminophen
      - Ultracet (tramadol 57.5mg + acetaminophen 325mg)
Hydrocodone

- Combined with non-opioid analgesics
  - Increases effectiveness without increasing opioid-related side effects
  - Limits potential for misuse
    - Hydrocodone (5, 7.5, 10mg) + Acetaminophen
      - 650mg acetaminophen (Lorcet) - JPS non-formulary
      - 500mg (Vicodin, Lortab) – on JPS formulary
      - Ibuprofen (Vicoprofen) – JPS non-formulary
  - Used in treatment of moderate to severe, acute or chronic pain
  - No long-acting formulation available

Morphine

- Oral (tablet and liquid), parenteral, and rectal forms.
  - Short-acting formulations
    - Tablets, JPS formulary: Morphine sulfate immediate release
    - Liquid, JPS formulary: Morphine sulfate oral solution
    - Use for patients with dysphagia, PEG tube
  - Tablets also available in various long-acting formulations
    - JPS formulary: morphine sulfate sustained release (Oramorph SR)
    - Steady state reached in approximately 2 days
  - Renally excreted
    - Patients with renal insufficiency experience prolonged effects
    - More likely to cause histamine release
      - Pruritis, vasodilation, flushing, and hypotension
      - Itching alone is a side effect, NOT a true allergy
  - Patients also available in various long-acting formulations
    - JPS formulary: morphine sulfate sustained release (Oramorph SR)
    - Steady state reached in approximately 2 days
  - Renally excreted
  - Patients with renal insufficiency experience prolonged effects

Oxycodone

- More potent than morphine on a mg per mg basis
  - More consistent bioavailability >50%
  - Compared to morphine 15-75%
  - Less side effects (hallucination, dizziness, pruritis) than morphine
  - Available forms on JPS formulary:
    - Combination with non-opioid analgesics
      - Percocet = oxycodone + acetaminophen
    - Oxycodone IR (Immediate release)
    - Oxycodone CR (controlled release)
      - Brand name: OxyContin
  - Renally excreted
    - Patients with renal insufficiency experience prolonged effects
Hydromorphone

- May be given IV, PO, or PR
- Less side effects (pruritis, sedation, N/V) compared to morphine
- 5-7 times greater mg-to-mg potency versus morphine
- Neuroexcitatory metabolite may accumulate in setting of renal insufficiency
- No long-acting formulation available
- JPS formulary
  - 2, 4 mg tablet
  - IV and PR forms also available

Fentanyl

- Available in IV and transdermal patches
  - Also: lozenge, buccal tablet (Fentora), buccal film (Onsolis)
- 75-100 times more potent than morphine
  - Dose measured in micrograms (not milligrams)
- Transdermal patch
  - Difficult to titrate due to variable rate of absorption, adherence to skin, and fat stores
  - Not effective in cachectic individuals
  - Most common side effect is local skin reaction
  - JPS formulary: 25, 50, 75, 100 mcg

Methadone

- Short-lasting analgesic effect but long-lasting half life
- Gaining acceptance in treatment of chronic pain
  - Especially mixed type pain with nociceptive and neuropathic components
  - NMDA receptor antagonist activity helps with neuropathic pain
- Potential for fatal arrhythmias
  - Do not use if patient has significant cardiac history
- Dosing and conversion is complicated
**Principles of Opioid Therapy**

- No ceiling for analgesic effect
  - Titrate up dose until sufficient analgesic effect or until side effects become intolerable
- Short acting opioids appropriate for:
  - Intermittent, moderate-severe pain
  - Breakthrough pain
- Long-acting opioids generally preferred over frequent dosing of short acting opioid
  - Less fluctuation in blood levels of drug
  - Avoids or minimizes euphoric and adverse effects

**Long-Acting Opioids**

- Should never be crushed or cut, which can result in overdose
- Should be administered precisely at set intervals
  - For example, with BID dosing, must be given at 12 hour intervals as precisely as possible to ensure smooth coverage over a 24 hour period

*In example above, single dose of a long acting opioid compared to three intermittent doses of short-acting opioid*
### Duration of Commonly Used Opioids

<table>
<thead>
<tr>
<th>Drug</th>
<th>Route/Duration</th>
<th>Route/Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>IV – 2hrs</td>
<td>IM – 3hrs</td>
</tr>
<tr>
<td>Morphine</td>
<td>SA – 3hrs</td>
<td>LA – 12hrs</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>SA – 4hrs</td>
<td></td>
</tr>
<tr>
<td>Meperidine</td>
<td>IV/IM – 1.5hrs</td>
<td>SA – 1.5hrs</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>SA – 3hrs</td>
<td>LA – 8-12hrs</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>SA – 3hrs</td>
<td>LA – 12hrs</td>
</tr>
<tr>
<td>Methadone</td>
<td>SA – 12 to 24 hrs</td>
<td></td>
</tr>
<tr>
<td>Fentanyl</td>
<td>IV – 15min</td>
<td>Patch – 72hrs</td>
</tr>
</tbody>
</table>

SA – Oral, short acting; LA – Oral, long-acting

### Converting Between Opioid Agents

- When adequate level of pain control achieved:
  - Calculate total 24hr-daily dose of current opioid
  - Convert first to total daily “morphine equivalent dose” when patient is being converted from more than one opioid
  - Calculate “equianalgesic dose” using conversion chart to find initial 24hr-dose of new opioid
  - Divide daily dose by the number of doses per 24 hour period

### Opioid Conversion
### Opioid Dose Conversion Table

<table>
<thead>
<tr>
<th>Opioid</th>
<th>PO (mg)</th>
<th>IV (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>7.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Meperidine</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>Methadone</td>
<td>2-4</td>
<td>-</td>
</tr>
</tbody>
</table>

Equianalgesic dose chart compares doses of different opioids required to produce same pain relief as morphine 30 mg PO.

### Five-Step Approach to Opioid Conversion

- **Step 1** - Globally assess the patient to determine if uncontrolled pain is secondary to worsening of existing pain or development of a new pain.
- **Step 2** – Determine the total daily dose of the current opioid. This should include all scheduled and PRN opioid doses.
- **Step 3** – Select new opioid and use established conversion tables to calculate equivalent dose, while recognizing that such conversions are approximations.
- **Step 4** – Individualize the dosage based on assessment of patient’s pain in Step 1 and ensure adequate medication available PRN for breakthrough pain.
Five-Step Approach to Opioid Conversion

- Step 5 – Patient follow-up and reassessment, especially during the first 7–14 days, to fine tune the total daily dose (long-acting + short-acting) and increase the around the clock long-acting dosage accordingly.

Conversions Involving Long Acting Morphine

Converting from Hydrocodone to Long Acting Morphine

- Morphine and hydrocodone have an equianalgesic dose ratio of 1:1.
- Calculate the average total dose of hydrocodone in a 24 hour period.
- Divide the total by 2 for q12hour dosing.
- Round to the nearest tablet dose.
Example

- A patient is on **Noco 10/325** three times a day receives **30 mg** total of Hydrocodone per day.

- This is approximately equivalent to **30 mg** of morphine, or **long acting morphine 15mg bid**.

Conversions Involving IV Morphine

Example Conversion

- Mr. Z is a 54 year old with pancreatic cancer. He has been medicated with IV morphine 6 mg q4 hrs prn pain. He has requested and received a dose every 4 hours. He says, “Doc, I’m doing OK on this level of medicine but I don’t want to go down any ‘cause I think the pain would be too bad.”

- How do we convert Mr. Z to oral medication to get him ready for discharge?
Example Conversion

- Calculate the total daily dose
  - 6mg x (24hrs/Q4hr) = 36mg total daily IV morphine
- Now decide on the oral opioid that you will use. We can use oral morphine since IV morphine has worked well for him.
- The conversion from IV to oral morphine is 1:3 so he will need a basal dose of 36mg x 3 = 108mg of total daily oral morphine.

Example Conversion

- At JPS, morphine sulfate SR is available in amounts of 15mg, 30mg, 60mg, and 100mg.
- So in this case we need to choose a dosing schedule to approximate 108mg oral morphine daily. Depending on his pain level we could go with 60mg BID for 120mg total or 45mg (30+15) BID for a total of 90mg
- Now we need to consider breakthrough pain!

Example Conversion

- For breakthrough pain, a common rule of thumb is to offer 10-15% of the total daily dose every 4hrs prn. In this case, 10-15% of 108mg total daily morphine would be just about 10-15 mg.
- Morphine sulfate IR comes in 15 and 30mg, so we would write for 15mg PO Q4hrs PRN breakthrough pain
Conversion Tips and Tricks

- It is safer to underdose slightly when converting to a different opioid due to incomplete cross-tolerance.
  - Typically reduce by approximately 25%.
- Close follow-up and monitoring required for the first few days after converting to a new opioid.

Conversions Involving Transdermal Fentanyl

- Limited data on conversion of transdermal fentanyl to other opioids.
- Manufacturer states this algorithm results in underdosing of up to 50%.
  - Therefore, using PRN doses of short-acting opioids for breakthrough pain appropriate.
- Steady state levels of fentanyl not attained until 3-6 days after application, low dose of previously used opioid should be prescribed to avoid withdrawal.
Conversion to Transdermal Fentanyl

<table>
<thead>
<tr>
<th>Oral Morphine Equivalent Dose</th>
<th>TD Fentanyl Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-134</td>
<td>25</td>
</tr>
<tr>
<td>135-224</td>
<td>50</td>
</tr>
<tr>
<td>225-314</td>
<td>75</td>
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<tr>
<td>315-404</td>
<td>100</td>
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<tr>
<td>405-494</td>
<td>125</td>
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<tr>
<td>495-584</td>
<td>150</td>
</tr>
</tbody>
</table>

Anticipating and Managing Common Opioid Adverse Effects

**Respiratory Depression**

- Irregular breathing
- Greatest risk occurs with initiation of opioid therapy at high doses in opioid-naïve patients
- Treat with naloxone 0.4 mg IV Q 2-3 minutes
  - Rapid onset of action
  - Titrate to reverse respiratory depression, but not to point of alertness which may precipitate withdrawal
  - May require repeat doses due to short duration
**Opioid Toxicity**
- May present as confusion, agitation, visual defects, vivid dreams or nightmares, visual and auditory hallucinations, and myoclonic jerks.
- Wide individual variation in dose of opioids may cause toxicity and is dependent on factors such as dose, concomitant medications, and renal and hepatic function.
- Toxicity managed with adequate hydration, acutely treating agitation, reducing dose, or changing to a different opioid.

**Sedation**
- Tolerance to sedation usually develops
- **Management**
  - Decrease dose or frequency of dosing
  - Switch to different opioid
  - Minimize other CNS depressant medications
  - Consider psychostimulant drugs (e.g. methylphenidate, modafinil)

**Allergic Reactions**
- True allergic and anaphylactic reactions rare
- Urticaria, pruritus, and asthma exacerbation common, but not considered true allergic reactions
- Opioids cause histamine release
- Premedicate with diphenhydramine
- A patient who is allergic to an opioid from one class (e.g. oxycodone, a phenanthrene) may often be changed to opioid from another class (e.g. methadone, a phenylheptane).
### Opioid Classification and Allergies

<table>
<thead>
<tr>
<th>PHENANTHRENES</th>
<th>PHENYLPIPERIDINES</th>
<th>PHENYLHEPTANES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codeine</td>
<td>Meperidine</td>
<td>Methadone</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>Fentanyl</td>
<td>Propoxyphene</td>
</tr>
<tr>
<td>Morphine</td>
<td></td>
<td></td>
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<tr>
<td>Oxycodone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrocodone</td>
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</tbody>
</table>

### Constipation
- Majority of patients on chronic opioid therapy will develop constipation.
- Unlike other adverse effects, *little or no tolerance develops*.
- Management includes adequate hydration, stimulating laxatives (e.g. senna), and suppositories or enemas PRN.
  - Add stool softener if needed.
  - Methylnaltrexone SQ is another option.
    - Antagonizes opioid receptors in GI tract without reversing analgesic effects.
    - Expensive.

### Nausea and Vomiting
- 30-60% of opioid-naive patients will develop nausea and/or vomiting with initiation of opioid therapy.
- *Tolerance usually develops within 5-10 days*.
  - Pain itself and anxiety due to pain can also cause nausea.
- Antiemetics PRN should be provided with initiation of opioid therapy.
Dry Mouth

- Common side effect
- Management
  - Frequent hydration with water
  - Sorbitol sweetened hard candy (which also helps with constipation) may help

Tolerance

- Decline in pain relief with increasing opioid dose
- Tolerance does occur in some patients, but is not inevitable
- Most common reason for decreased analgesic effect is disease progression
- Must first rule out disease progression, noncompliance, inappropriate dosing, and abuse or diversion
- Consider rotating to different opioid

Opioid Withdrawal

- Uncomfortable, but not life threatening
- Onset and duration depends on half-life of drug
- Flu-like symptoms: rhinorrhea, lacrimation, sneezing, yawning, cramping, piloerection, nausea, vomiting, diarrhea, dilated pupils
- Does not cause altered mental status or seizures
- Various treatment and management options
  - Restart opioid (including methadone)
  - Clonidine
  - Benzodiazepines
  - Anti-emetics
Geriatric Considerations

- Increased risk of complications
- Long-term NSAID use discouraged
- Prolonged or increased effects of opioids due to decreased clearance
  - Requires closer monitoring
- Initiate opioid therapy at doses 25-50% lower

Summary

- Pain must be managed just like any other medical disease or condition
- Effective pain management should be goal of every health care provider
  - It is an essential facet of providing compassionate medical care
- Overcoming our own fear of prescribing opioids is our responsibility – not the patient’s

Post-Test Questions

1. Which of the following is NOT part of the Texas Medical Board guidelines?

   A. Suggested maximum dose limit for each opioid
   B. Prevention of over treatment of pain
   C. Prevention of under treatment of pain
   D. Documentation of medical necessity for prescription of opioids
   E. The need to address psychosocial aspect of pain
Post-Test Questions

2. Which of the following is FALSE regarding pseudoaddiction?
   A. Patients with pseudoaddiction may behave the same way as patients with addiction
   B. Pseudoaddiction resolves upon institution of effective analgesic therapy
   C. Urine drug screen is ineffective for distinguishing addiction from pseudoaddiction
   D. It occurs in patients who are overtreated
   E. None of the above

Post-Test Questions

3. The definition of "chronic" pain is pain lasting greater than:
   A. 1 month
   B. 3 months
   C. 4 months
   D. 6 months
   E. 12 months

Post-Test Questions

4. Neuropathic pain is described as:
   A. Burning
   B. Itching
   C. Electrical shock
   D. Tingling
   E. All the above
   F. None of the above
Post-Test Questions
5. Which of the following opioids is thought to be useful for the treatment of neuropathic pain?
   A. Fentanyl
   B. Hydrocodone
   C. Hydromorphone
   D. Methadone
   E. Morphine
   F. Oxycodone
   G. None of the above

Post-Test Questions
6. A patient who has been prescribed an ibuprofen for mild-moderate knee pain due to arthritis, but states that it does not help. You decide to try a different NSAID. Which of the following would you not choose?
   A. Celecoxib
   B. Diclofenac
   C. Etodolac
   D. Meloxicam
   E. Naproxen

Post-Test Questions
7. Which of the following is true about opioids?
   A. There are no published guidelines for the maximum dose for each opioid
   B. Short acting opioids should never be used in chronic pain due to risk of addiction
   C. Patients with chronic pain should only be prescribed long acting opioids
   D. Long-acting opioids minimize euphoric effects and do not result in addiction
Post-Test Questions

8. Your patient is on morphine 4 mg IV Q4 hours PRN for post-operative pain. He only requests the morphine about 4 times a day and is well controlled. You plan to discharge him home tomorrow with hydrocodone. What is the most appropriate dosing?

A. Hydrocodone/acetaminophen 10/325 two tablets PO Q6 hours PRN
B. Hydrocodone/acetaminophen 10/325 one tablet PO Q6 hours PRN
C. Hydrocodone/acetaminophen 7.5/500 one tablet PO Q6 hours PRN
D. Hydrocodone/acetaminophen 5/500 one tablet PO Q6 hours PRN

Post-Test Questions

9. Which of the following is false regarding transdermal fentanyl patch?

A. Most common adverse effect is local skin reaction
B. It is not appropriate for acute post-surgical pain
C. It is especially effective in cachectic cancer patients
D. It is difficult to convert to and from other opioids
E. All of the above
F. None of the above

Post-Test Questions

10. Your patient on a hydromorphone PCA says to you, ”My pain is better but I can’t calm down and rest. I’m jittery and I feel like something bad is going to happen any minute.” Your first response should be:

A. Consult psychiatry
B. Start a benzodiazepine for anxiety.
C. The patient should be switched to another medication due to opioid toxicity
D. Continue hydromorphone PCA and reassure the patient that this is a common transient side effect
E. Add an adjunctive agent for neuropathic pain
Post-Test Questions

11. A patient develops a pruritic rash after taking morphine, but otherwise seems stable. What should you do?
   A. Stop morphine and treat with epinephrine as it may develop into an anaphylactic reaction
   B. Document that patient has a morphine allergy in their medical record
   C. Treat with diphenhydramine and premedicate before subsequent doses
   D. A and B
   E. B and C

Post-Test Questions

12. Tolerance does NOT develop for which of the following side effects of opioids after chronic use?
   A. Nausea
   B. Constipation
   C. Sedation
   D. All of the above
   E. None of the above