Rules

• Buzz first and player answers
• If answer correct, then the player asks teammates if they want to keep the question
• Each player on that team then gives an answer
• Each correct answer is worth one point
• 3 wrong answers and the other team is up
• 3 wrong answers and the slide of answers is shown
• Team with most points wins a prize
Question 1:
What are adverse side effects of opioids?
What are adverse side effects of opioids?

- Respiratory depression
- Somnolence
- Dysphoria
- Delirium
- Nausea/vomiting
- Pruritus
- Constipation
- Myoclonus
- Hyperalgesia
Question 2:
What can you do to decrease adverse effects of opioids?
What can you do to decrease adverse effects of opioids?

• Decrease drug dose
• Increase interval
• Change route of administration (po, iv)
• Add non-opioid like acetaminophen or ibuprofen
• Integrate non-pharm tx (acupuncture, biofeedback)
• Encourage exercise
• Add low dose naloxone (po, drip)
• Opiate rotation (incomplete cross tolerance)
Multimodal approach

- Address sleep, anxiety, nausea, spasm, depression
- Encourage exercise, massage, biofeedback, acupuncture
- Reduce opiate side effects (constipation, itching, nausea, sedation, hypventilation)
Question 3:

What are symptoms of opioid withdrawal?
What are symptoms of opioid withdrawal?

- Abdominal pain
- Diarrhea
- Nausea/vomiting
- Dysphoria, restlessness
- Myalgia, arthralgia
- Rhinorrhea, lacrimation
Question 4:

What secondary symptoms can negatively influence the perception of pain?
What secondary symptoms can negatively influence the perception of pain?

- Sleep
- Nausea
- Pruritus
- Spasm
- Anxiety
- Depression
- Inactivity
Multimodal approach

• Address sleep, anxiety, nausea, spasm, depression
• Encourage exercise, massage, biofeedback, acupuncture
• Reduce opiate side effects (constipation, itching, nausea, sedation, hypventilation)
Question 5:

What are common types of pain?
Types of pain

PAIN

NOCICEPTIVE
- Expected result of tissue injury
- Acute tissue injury or acute inflammation
- Normal neural transmission
- Localized
- Resolves with healing

NEUROPATHIC
- Primary lesion or dysfunction in the nervous system
- Pain persists independent of ongoing tissue injury or inflammation
- Chronic, intractable pain
Primary Pain Fibers (Nociceptors)

- 2 types (slow and fast)
  - A-delta fibers
    - Myelinated – Fast
    - Sharp pain – key for precise localization
  - C-fibers
    - Unmyelinated - Slow
    - Burning or aching pain – provides information about severity and ongoing tissue damage
The Nociceptive Pain Pathway
Question 6:

What are target receptors for pain medication?
(extra credit- different mechanisms)
Sites to Target

- COX-1, 2, 3
- Opiate (Mu) Receptor
- Post-synaptic 5-HT receptor
- NMDA Receptor Alpha-2 Receptor on spinal nociceptors
- Nerve Membrane
- Capsaicin Receptor (TRPV-1)

- Descending Corticospinal inputs
- Descending Brainstem Inputs (nucleus raphe magnus)
- A-Beta Inputs (Gate Control)
- Cortical Processing (anxiety, coping)
Pain Targets

TCAs / SSRIs / SNRIs
α₂ adrenergic antag / Tramadol, Oxycodon CR

Descending fibres

Dextrororphoban

5HT Opioid α₂
Ca++ channels

Substance P

NMDA AMPA

Substantia gelatinosa

Topiramate Pregabalin Gabapentin

DRG

C-fiber

Glutamate

Capsaicin Clonidine Lamotrigine

Aδ fiber

Na channels

Topiramate/ Pregabalin Gabapentin/ Carbamazepsine

TCAs / Insulin / Lamotrigine

Interneuron

GABA

GABA

GABAA

GABAB

Carbamazepsine

Topiramate Pregabalin Gabapentin
Question 7:
What medications can be used for neuropathic pain?
What meds can be used for neuropathic pain?

- Gabapentin, pregabalin
- Conventional anticonvulsants (tegretol, valproate)
- Tricyclic antidepressants (amitriptyline)
- SNRI (cymbalta)
- Methadone
Neuropathic Pain

• Caused by injured, altered or dysfunctional hyperexcitability of the peripheral or central nervous system
• Typically burning, stabbing, or shooting sensation
• Typically persists over a longer period of time
• May experience hyperalgesia or allodynia
• Meds stabilize neuronal membrane
Question 8:

What are some topical anesthetics?
Local & Topical Anesthetics

- EMLA, LMX
- Synera
- Zingo
- Shot Blocker
- Lidocaine
  - Buffer it
  - Warm it
  - Use small needle
- LET, TAC
- Vapocoolant sprays
Question 9:

What atypical behaviors can children display when in pain?
Children often display atypical behavioral responses to pain

- May become very quiet and still (tuning out the world)
- May sleep a lot
- May continue to play (self-directed distraction)
Question 10:

What are techniques to decrease procedural pain?
What are techniques to decrease procedural pain?

• Swaddling
• Parent holding
• Pacifier
• Sucrose
• Topical anesthetics
• Preemptive analgesia (acetaminophen)
Question 11:
What complementary therapies can be used in pain management?
What complementary therapies can be used in pain management?

- Acupuncture
- Biofeedback
- Guided imagery
- Distraction (bubbles, books, breathing)
- Hypnosis
- Yoga, meditation
- Progressive muscle relaxation
- Heat, cold
- Prayer
Question 12:

Why is codeine not a preferred pain medication?
Codeine

- Weak opiate – ceiling effect due to limited metabolic conversion
- Must be metabolized to morphine for analgesic effects
- Other metabolites cause nausea, dysphoria
- 10% of population CANNOT metabolize – no analgesic effect
- 1-2% are ultra-rapid metabolizers – prone to morphine intoxication at normal doses
# Ethnic breakdown of Ultra-Rapid Metabolizers of Codeine

<table>
<thead>
<tr>
<th></th>
<th>Per 100 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasians</td>
<td>1-10</td>
</tr>
<tr>
<td>African Americans</td>
<td>3</td>
</tr>
<tr>
<td>Chinese or Japanese</td>
<td>1</td>
</tr>
<tr>
<td>Hispanics</td>
<td>1</td>
</tr>
<tr>
<td>North Africans, Ethiopians, or Saudi Arabians</td>
<td>16-28</td>
</tr>
</tbody>
</table>
Question 13:

List 3 medications used for mild, moderate, and severe pain (3 each total to equal 9)

(purple card)
# Common Post-op Pain Meds

<table>
<thead>
<tr>
<th>UCSF</th>
<th>Oral options</th>
<th>IV options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>Acetaminophen and/or Ibuprofen</td>
<td>Acetaminophen (Ofirmev)</td>
</tr>
<tr>
<td>(mild pain)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Tramadol (Ultram) or Acetaminophen/Hydrocodone</td>
<td>Ketorolac (Toradol)</td>
</tr>
<tr>
<td>(moderate pain)</td>
<td>(Vicodin, Norco, Lortab, Hycet)</td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Oxycodone or Acetaminophen/Oxycodone</td>
<td>Morphine or Dilaudid</td>
</tr>
<tr>
<td>(severe pain)</td>
<td>(Percocet, Roxicet)</td>
<td></td>
</tr>
</tbody>
</table>
And the winners are....

Add points and pass out prizes!
Discussion:

What lessons in pain management can be applied to Case E patient Sven?
What lessons in pain management can be applied to Case C patient?

- Wean off Oxycontin
- Discourage oxycodone
- Consider a pain contract
- Improve diet
- Encourage exercise
- Address nausea
- Ask about sleep, anxiety, depression
- Try more biofeedback or other comp
Acupressure for nausea