

# Acute Pain Management

---

Brenda Shinar, MD, FACP  
Transitions 2021

<https://www.youtube.com/watch?v=KPrSHrlvWI4>



# Learning Objectives

---

- Describe the differences between somatic, visceral, and neurogenic pain.
- Understand the different “pain scales” used for patients to describe the severity of their pain.
- Describe the initial management of an opiate naïve patient who is in acute severe pain from a broken limb.
- Describe the initial management of a patient with chronic, long- acting opiate use who presents with the onset of severe acute on chronic pain.
- Understand opiate equivalent doses. Be able to convert different opiates from IV to oral based on these equivalents and adjust for cross-tolerance.
- Know how to access the prescription monitoring program (PMP) database to make informed decisions about opioid therapy.



# “Describe Your Pain”

## Types of Acute Pain

---

- Nociceptive Pain (Somatic)

- Nerves sense and respond to damage to soft tissue, muscle or bone
- Aching, throbbing, localized, constant

- Neuropathic (Neurogenic)

- Nervous system structures themselves are injured (trauma, entrapment, disease)
- Burning, sharp, electrical shock type feeling

- Visceral (Referred)

- Poorly localized, referred based on **embryologic development**
- Distention, ischemia, and inflammation are triggers
- Aching, squeezing, deep, colicky
- Associated with nausea, vomiting

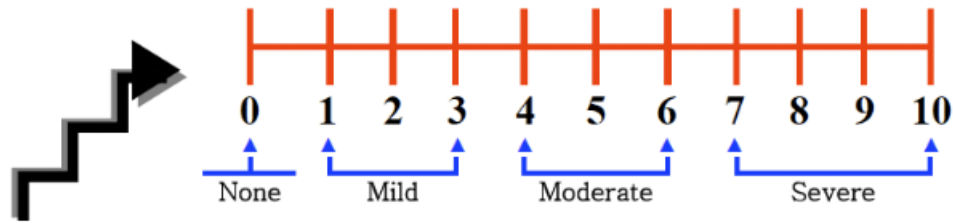
- Mixed



# “Rate Your Pain”

Assess Severity

## Numerical Rating Pain Scale



NIH/Warren Grant Magnusen Clinical Center

- Mild Pain
  - 1-3
  - Generally, opiates not necessary

## Wong-Baker Faces Pain Scale

Wong-Baker FACES Pain Rating Scale



From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: *Wong's Essentials of Pediatric Nursing*, ed. 6, St. Louis, 2001, p. 1301. Copyrighted by Mosby, Inc. Reprinted by permission.

- Moderate Pain
  - 4-6
- Severe Pain
  - 7-10



# Choose Your Method of Pain Relief

---

- |                |   |                               |
|----------------|---|-------------------------------|
| Mild<br>1-3    | { | ▪ Hot pack/ Ice pack/ Massage |
|                |   | ▪ Oral Tylenol/ Ibuprofen     |
| Mod<br>4-6     | { | ▪ IV NSAID                    |
|                |   | ▪ Oral opioid/ Tylenol combo  |
| Severe<br>7-10 | { | ▪ IV Opioid                   |
- 
- Adjunctive agent
    - Anti-inflammatory
    - Neuropathic agent
    - Antidepressant /antiepileptic

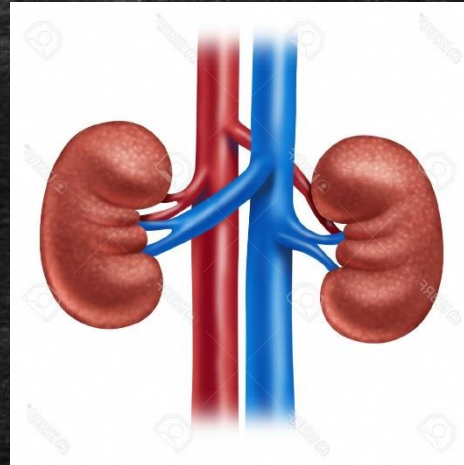




## Other Considerations...

---

- Age of patient
- Opioid naïve or tolerant
- Renal function
- Hepatic function





# Case 1

---

A 24-year-old woman previously healthy woman is admitted for a large peritonsillar abscess. She is unable to open her mouth or swallow due to severe pain. She has no airway compromise. The ENT doctor has seen the patient and determines that she needs to go to the OR for drainage in approximately 4 hours. He has prescribed IV unasyn and decadron.

The patient has a normal chemistry panel with a WBC of 17,000.

You are called to see the patient who is crying due to severe pain.

**Which of the following is the most appropriate choice for pain control in this patient?**

- A. Oral ibuprofen 600-800 mg now
- B. IV ketorolac 15 mg now
- C. Oral acetaminophen 325 mg/oxycodone 5 mg x 2 now
- D. IV morphine 2-4 mg now



# Case 1

---

A 24-year-old woman previously healthy woman is admitted for a large peritonsillar abscess. She is unable to open her mouth or swallow due to severe pain. She has no airway compromise. The ENT doctor has seen the patient and determines that she needs to go to the OR for drainage in approximately 4 hours. He has prescribed IV unasyn and decadron.

The patient has a normal chemistry panel with a WBC of 17,000.

You are called to see the patient who is crying due to severe pain.

Which of the following is the most appropriate choice for pain control in this patient?

- A. Oral ibuprofen 600-800 mg now
- B. IV ketorolac 15 mg now
- C. Oral acetaminophen 325 mg/oxycodone 5 mg x 2 now
- D. IV morphine 2-4 mg now



# Case 1

---

You give the patient a dose of morphine 2 mg IV.

One hour later the nurse calls to tell you that the patient is extremely upset and feels no relief from the medication you prescribed.

Which of the following is the **LEAST** likely explanation?

- A. The patient is drug-seeking
- B. The patient is “pseudoaddicted” and is really in significant pain
- C. The dose of the medication was not high enough to give her significant pain relief
- D. The inflammatory source of her pain might have been better treated with ketorolac



# Case 1

---

You give the patient a dose of morphine 2 mg IV.

One hour later the nurse calls to tell you that the patient is extremely upset and feels no relief from the medication you prescribed.

Which of the following is the LEAST likely explanation?

- A. The patient is drug-seeking
- B. The patient is “pseudoaddicted” and is really in significant pain
- C. The dose of the medication was not high enough to give her significant pain relief
- D. The inflammatory source of her pain might have been better treated with ketorolac



# Case 1

---

Which of the following would have been the best strategy to prevent the patient's pain for the past hour?

A. Order a PCA (patient-controlled analgesia) pump for the patient to give herself as needed IV pain medication

B. Stay at the bedside for 10-15 minutes to see if she had relief

B. Start with a higher dose of IV narcotic as the first dose





# Case 1

---

Which of the following would have been the best strategy to prevent the patient's pain for the past hour?

A. Order a PCA (patient-controlled analgesia) pump for the patient to give herself as needed IV pain medication

**B. Stay at the bedside for 10-15 minutes to see if she had relief**

C. Start with a higher dose of IV narcotic as the first dose





Onset of Action: **Wait** to see response  
and **re-dose if needed**

Drug (United States brand name)	Sample initial dose for opioid-naïve adult <sup>¶</sup>	Serum half-life (in hours)	Duration of analgesic effect (in hours)
<b>Parenteral opioids</b>			
Fentanyl (Sublimaze)	25 to 50 mcg for moderate pain or 50 to 100 mcg for more severe pain IV/subcutaneous; repeat every two to five minutes as needed until adequate pain relief	7 to 12	0.5 to 1 (IV) 1 to 2 (subcutaneous)
Hydromorphone (Dilaudid)	0.2 to 0.5 mg IV; repeat every five minutes as needed until adequate pain relief, then 0.2 to 0.5 mg IV three to four hours as needed	2 to 3	3 to 4
Morphine (Infumorph, others)	1 to 3 mg IV; repeat every five minutes as needed until adequate pain relief; then 1 to 3 mg IV every three to four hours as needed	2 to 3	4 to 5



## Case 2

---

A 39-year-old previously healthy woman comes to the ED with a broken humerus after a fall in her garage. The arm is in a splint applied by paramedics, and x-ray reveals a spiral fracture with displacement that will need surgery.

The paramedics have given her morphine IV 1 mg every 5-10 minutes in the ambulance for a total of 5 mg. (over 30 minutes). She is tearful but able to move the arm for the x-ray without yelling in pain. She is not sedated.

Surgery is planned for tonight in about 6-7 hours.

In the ED, she is given 50 mcg IV fentanyl q 30 minutes for 3 hours (six doses) before she goes to the ortho floor. Her pain is at a 4, and she is not sedated.

What is the total equivalent dose of morphine that she received in the ED for the past 3 hours?

- A. 30 mg
- B. 10 mg
- C. 300 mg
- D. 100 mg





## Case 2

---

A 39 year-old previously healthy woman comes to the ED with a broken humerus after a fall in her garage. The arm is in a splint applied by paramedics, and x-ray reveals a spiral fracture with displacement that will need surgery.

The paramedics have given her morphine IV 1 mg every 5-10 minutes in the ambulance for a total of 5 mg. (over 30 minutes). She is tearful but able to move the arm for the xray without yelling in pain. She is not sedated.

Surgery is planned for tonight in about 6-7 hours.

In the ED, she is given 50 mcg IV fentanyl q 30 minutes for 3 hours (six doses) before she goes to the ortho floor. Her pain is at a 4, and she is not sedated.

What is the total equivalent dose of morphine that she received in the ED for the past 3 hours?

- A. 30 mg
- B. 10 mg
- C. 300 mg
- D. 100 mg





DRUG	Equianalgesic Doses (mg)	
	IV	Oral
Morphine IR	10 mg	30 mg
Fentanyl	100 mcg	NA
Hydromorphone (Dilaudid)	1.5-2 mg	7.5-8 mg
Meperidine Demerol	75 mg	300 mg

# Know the Opioid Dose Equivalents

Fentanyl 50 mcg x 6 = 300 mcg

$$\frac{100 \text{ mcg F}}{300 \text{ mcg}} = \frac{10 \text{ mg M}}{X \text{ mg}}$$

$$X = 30 \text{ mg}$$



## Case 3

---

A 50-year-old man with a history of alcohol abuse comes to the hospital with an episode of acute pancreatitis. He states that his pain is "11/10" and is curled up on his side in the bed.

He has a history of cirrhosis of the liver from alcohol. His creatinine is 2.1 on admission (up from 1.2 as outpatient.)

What is the best choice of pain medicine to give this patient?

- A. IV fentanyl
- B. IV morphine
- C. IV dilaudid
- D. IV demerol





## Case 3

---

A 50-year-old man with a history of alcohol abuse comes to the hospital with an episode of acute pancreatitis. He states that his pain is "11/10" and is curled up on his side in the bed.

He has a history of cirrhosis of the liver from alcohol. His creatinine is 2.1 on admission (up from 1.2 as outpatient.)

What is the best choice of pain medicine to give this patient?

- A. IV fentanyl
- B. IV morphine
- C. IV dilaudid
- D. IV demerol





# Pharmaco...what?

---

- Morphine
  - Onset (10 minutes)
  - Histamine release (flushing, tachycardia, hypotension)
  - Renal metabolism to M3 and M6
  - Not recommended Crcl < 30
- Fentanyl (synthetic)
  - Rapid onset (3-5 minutes)
  - Minimal hemodynamic effects and no histamine release
  - No change in pharmacokinetics due to renal or hepatic insufficiency

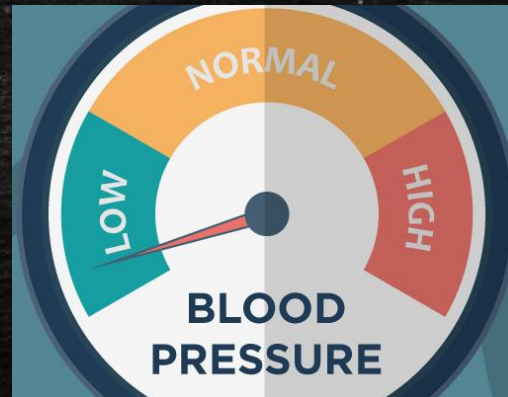
- Pharmacokinetics:
  - What the **body** does to the **drug**
- Pharmacodynamics:
  - What the **drug** does to the **body**

- Hydromorphone (semi-synthetic)
  - Onset (10 minutes)
  - Prolonged duration of action (q 4-6 hours)
- Meperidine
  - No longer first line
  - Renal metabolite, normeperidine is neurotoxic causing seizures



# Side Effects of Opioids

- Sedation
- Respiratory depression
- Nausea
- Pruritis (histamine release)
- Hypotension
- Constipation
- Urinary retention





## Case 4

---

A 42 year-old man with sickle cell disease is admitted with an acute pain crisis. He tells you that he is on chronic long acting MS Contin daily at 100 mg Q 8 hours, and also takes Percocet 5 mg/325 mg 1-2 pills po every 6 hours as needed for breakthrough pain.

On admission he appears in severe pain, in his shoulder and low back.

Vital signs reveal a BP of 140/90 mm Hg, HR 100, and he is afebrile. O<sub>2</sub> saturations are 95% on room air. Labs reveal a hemoglobin of 7 g/dL, reticulocyte count of 15% and normal creatinine at 0.8 mg/dL

**Which of the following is the most appropriate next step in the management of this patient's pain?**

- A. Call the patient's pharmacy to confirm the outpatient dose
- B. Call the patient's primary care doctor to confirm the outpatient dose
- C. Look up the patient on the PMP website to determine his outpatient regimen
- D. Ask to patient's family to bring the prescription bottle to confirm the outpatient dose



## Case 4

---

A 42 year-old man with sickle cell disease is admitted with an acute pain crisis. He tells you that he is on chronic long acting MS Contin daily at 100 mg Q 8 hours, and also takes Percocet 5 mg/325 mg 1-2 pills po every 6 hours as needed for breakthrough pain.

On admission he appears in severe pain, in his shoulder and low back.

Vital signs reveal a BP of 140/90 mm Hg, HR 100, and he is afebrile. O<sub>2</sub> saturations are 95% on room air. Labs reveal a hemoglobin of 7 g/dL, reticulocyte count of 15% and normal creatinine at 0.8 mg/dL

**Which of the following is the most appropriate next step in the management of this patient's pain?**


- A. Call the patient's pharmacy to confirm the outpatient dose
- B. Call the patient's primary care doctor to confirm the outpatient dose
- C. Look up the patient on the PMP website to determine his outpatient regimen
- D. Ask to patient's family to bring the prescription bottle to confirm the outpatient dose



# Search PMP (Prescription Monitoring Program)

<https://arizona.pmpaware.net>

RxSearch > Patient Request

 Arizona Board of Pharmacy  
Support: 1-855-929-4767

**Patient Request** [? Patient Rx Request Tutorial](#)  
Can't view the file? [Get Adobe Acrobat Reader](#)  
\* Indicates Required Field

**Patient Info**

First Name\*  Last Name\*   
 Partial Spelling  Partial Spelling

Date of Birth\*   
MM/DD/YYYY

**Prescription Fill Dates**  
No earlier than 11 years from today

From\*  To\*   
03/08/2018 03/08/2019

**Patient Location**  
Search accuracy can be improved by including the address

Street Address

- Verify prescriptions and doses
- Look for “doctor and pharmacy shopping” behavior
- Look for coexisting benzodiazepines
- It’s the law!!



## Case 4

---

A 42 year-old man with sickle cell disease is admitted with an acute pain crisis. He is on chronic long acting MS Contin daily at 30 mg Q 12 hours, and also takes Percocet 5 mg/325 mg 1-2 pills po every 6 hours as needed for breakthrough pain.

On admission he appears in severe pain, in his shoulder and low back.

Vital signs reveal a BP of 140/90 mm Hg, HR 100, and he is afebrile. O<sub>2</sub> saturations are 95% on room air. Labs reveal a hemoglobin of 7 g/dL, reticulocyte count of 15% and normal creatinine at 0.8 mg/dL

Which of the following is the best strategy for the patient's acute pain?

- A. Continue MS Contin 30 q 12 hours and start IV morphine 5 mg q 3-4 hours
- B. Stop MS Contin and start IV morphine 5-10 mg q 3-4 hours
- C. Continue MS Contin and start IV patient controlled analgesia (PCA) with IV fentanyl
- D. Stop MS Contin and start IV patient controlled analgesia (PCA) with IV morphine



## Case 4

---

A 42 year-old man with sickle cell disease is admitted with an acute pain crisis. He is on chronic long acting MS Contin daily at 30 mg Q 12 hours, and also takes Percocet 5 mg/325 mg 1-2 pills po every 6 hours as needed for breakthrough pain.

On admission he appears in severe pain, in his shoulder and low back.

Vital signs reveal a BP of 140/90 mm Hg, HR 100, and he is afebrile. O<sub>2</sub> saturations are 95% on room air. Labs reveal a hemoglobin of 7 g/dL, reticulocyte count of 15% and normal creatinine at 0.8 mg/dL

Which of the following is the best strategy for the patient's acute pain?

- A. Continue MS Contin 30 q 12 hours and start IV morphine 5 mg q 3-4 hours
- B. Stop MS Contin and start IV morphine 5-10 mg q 3-4 hours
- C. Continue MS Contin and start IV patient controlled analgesia (PCA) with IV fentanyl
- D. Stop MS Contin and start IV patient controlled analgesia (PCA) with IV morphine



# Tolerance and Physical Dependence

---

- **Tolerance**

- State of adaptation
- Exposure induces changes that produces a diminution of 1 or more of the drug's effects over time
  - Sedation vs analgesia
- For opioids and analgesia this means a need to increase the dose to achieve the same previous effect
- Not indicative of addiction

- **Physical Dependence**

- State of adaptation manifested by drug class-specific withdrawal syndrome
  - Abrupt cessation
  - Rapid dose reduction
  - Administration of an antagonist
- Occurs in all patients using opioids for a period of time
- Physical dependence is not indicative of addiction





# Acute Pain Management in Opioid Tolerant Patients

- New acute on chronic pain
- Continue long-acting opioids for baseline chronic pain
- Start short acting opioids for the new acute pain
- Dose may need to be higher than the opiate naïve patient due to tolerance

	Acute Pain	Chronic Pain
Onset	Usually sudden	Long duration
Characteristics	Sharp, localized, may radiate	Dull, aching, persistent, diffuse
Signs and Symptoms	Autonomic response Hyperactivity Emotional response Anxiety, restlessness	Autonomic response Often absent Emotional response Flat, depressed



# Indications for Patient Controlled Analgesia (PCA)

---

1. Post-operative pain
  2. Severe acute pain
  3. Acute exacerbations of chronic pain
  4. Cancer pain
  5. Patients unable to take oral medications
- **Loading dose**
    - 2 mg IV morphine q 5 minutes for maximum of 20 mg
  - **Basal dose**
    - Only for opioid tolerant patients
    - Severe rest pain/nighttime pain
    - 2 mg IV morphine q 1 hour
  - **Demand dose**
    - Patient delivered dose when they press the button
    - 2 mg IV morphine
  - **Lock out interval**
    - The time interval before the pump can deliver the next dose
    - 10 minutes = the patient can push the button 20 times in 10 minutes but will only get one dose



Questions?