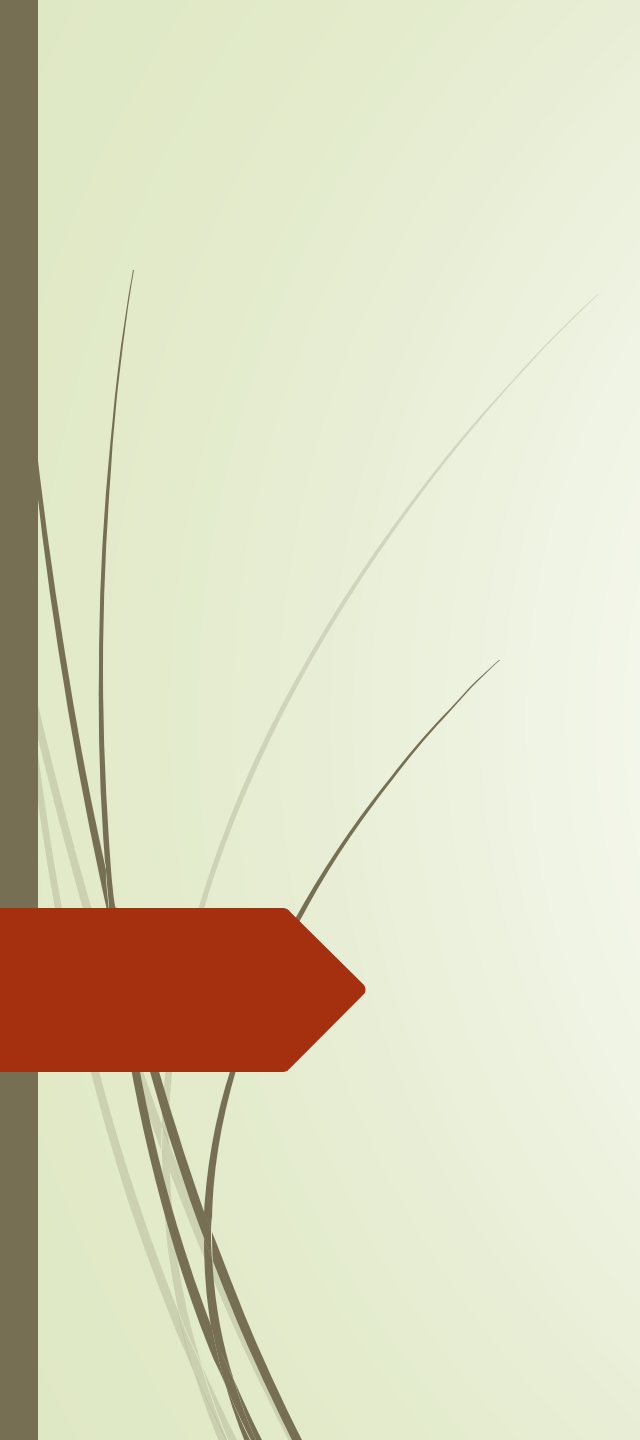




# Pain Management 101

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# Disclosures

## None

### ➤ Objectives

- Review the components of a comprehensive pain assessment
- Review patient factors that influence prescribing in practices
- Review opiate management practices
  - Oral Morphine Equivalence
  - Opiate Rotation
- Understand audience perspective
  - Barriers/challenges
  - Proposed solutions

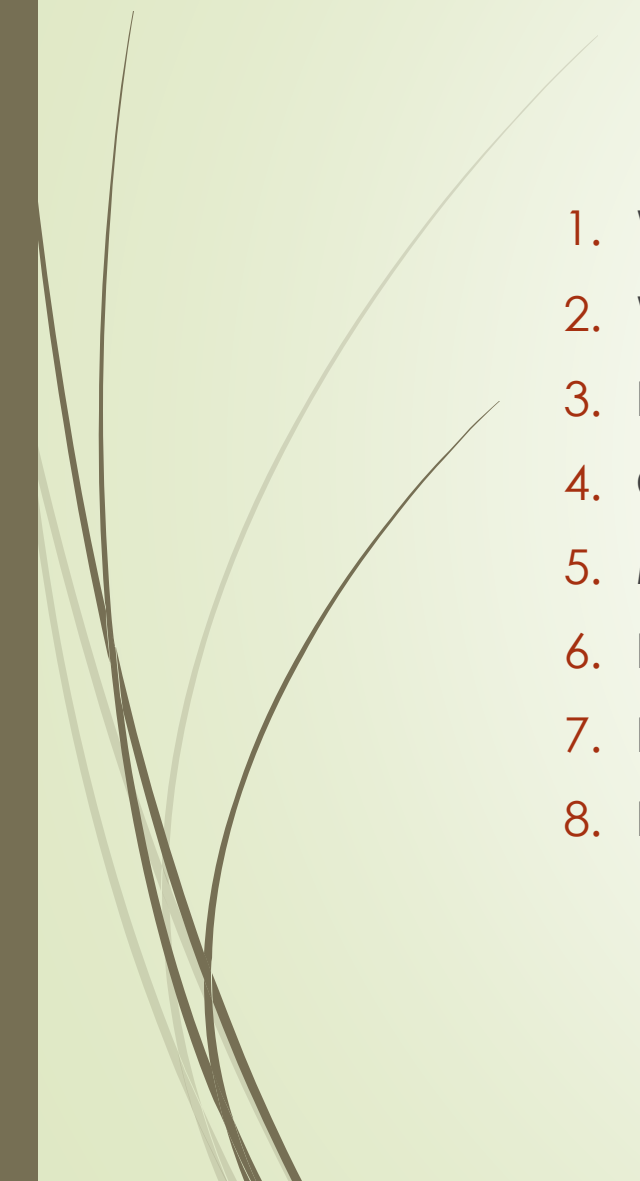


# Barriers to Pain Control & Opiate Management

- Fear of diversion
  - Fear of overdose
  - Fear of substance use disorder
  - Fear of legal and regulatory entanglements
  - Fear of prescribers' lack of mastery
- 
- **Knowledge** is necessary to combat **Fear**
  - **Absence** of an established system for implementation



# General Principles



1. When in doubt reach out
2. What is the source/nature of the patient's pain
3. Frequent monitoring and titration are essential
4. Calculate Oral Morphine Equivalence OME
5. Maximize one opiate before adding another
6. Don't forget Tylenol/ NSAIDs and non-opiate analgesics
7. Don't forget adjuncts
8. Don't forget bowel regimen



# General Principles: Opiate Rotation

1. Compute OME/MME
2. Dose reduce 25-50% for incomplete cross tolerance.
3. Long-acting agent 100-66.7% of 24 hour OME
4. Short-acting 5-15 % of 24 hours long-acting dose for Break Through Pain BTP
5. **Frequent monitoring and titration are essential**



OME

## Equianalgesic Conversion Table

| Drug Name     | Equianalgesic Dose |                 | Oral to Parenteral Ratio |
|---------------|--------------------|-----------------|--------------------------|
|               | Oral (mg)          | Parenteral (mg) |                          |
| Morphine      | 25                 | 10              | 5:2                      |
| Hydromorphone | 5                  | 2               | 5:2                      |
| Oxycodone     | 20                 | n/a             | n/a                      |
| Hydrocodone   | 25                 | n/a             | n/a                      |
| Oxymorphone   | 10                 | 1               | 10:1                     |

### Potency ratios:

- oral morphine: oral hydromorphone is 5:1
- oral morphine: oral oxycodone is 1.25:1
- oral morphine: IV hydromorphone is 12.5:1
- transdermal fentanyl 25mcg/hr: oral morphine 50mg/24hr

**Oral hydromorphone is 5 times as potent (mg per mg) as oral morphine**

This conversion table is adapted from: *McPherson ML. Demystifying Opioid Conversion Calculations: A Guide for Effective Dosing, 2nd ed. American Society of Health-System Pharmacists, Bethesda, Maryland, 2018.*





# Structure Protocol for Choosing the Right Pain Medication

- I. Complete pain assessment
- II. Match the appropriate drug to the pain type
  - Opiate vs Non-Opiate
  - Short-acting/Long-acting
  - Opiate naïve or not
- III. Consider the risks and side effects
- IV. Assess the safest route of delivery
- V. If rotating opiates, follow guidelines



# The Comprehensive Pain Assessment

- I. Discern the characteristic of the patient's pain
  - I. Somatic Pain
  - II. Visceral Pain
  - III. Nociceptive Pain
- II. Assess functional history
- III. Review prior drug and non-drug therapy
- IV. Examine the patient and review pertinent data





# Somatic Pain

- Caused by tissue damage to skin, soft tissue, muscle or bone
- Described as:
  - Aching
  - Deep
  - Dull
  - Gnawing
  - Sharp
  - Stabbing
- Well-localized – patients can often point with one finger to the location of their pain



# Visceral Pain



- Pain in the visceral organs such as gallbladder, intestine, liver
- Descriptors:
  - Cramping
  - Squeezing
  - Pressure
  - Full
  - Bloating
  - All-over
  - Gassy
  - May be accompanied by nausea, vomiting or sweating

- Referred:
  - Myocardial infarction – jaw or arm pain
  - Kidney stone – back pain
  - Liver capsule – shoulder
- Colicky - severe abdominal pain that comes and goes, may come in waves:
  - Bowel obstruction
  - Gallstone
- Diffuse:
  - Peritonitis
  - Liver metastasis
  - Retroperitoneal adenopathy



# Neuropathic Pain

- Injury or inflammation of nerves
- Often coexists with somatic or visceral pain

## ➤ Descriptors:

- Burning
- Lancing
- Electric
- Numb
- Radiating
- Shooting
- Stabbing
- Tingling
- Heat
- Hypersensitive skin

## ➤ Distribution

### ➤ Radicular Pain

- Herpes Zoster
- Sciatica

### ➤ Stocking Glove

- Diabetic Neuropathy
- Chemotherapy induced neuropathy



# Structure Protocol for Choosing the Right Pain Medication

- I. Complete pain assessment
- II. Match the appropriate drug to the pain type
  - Opiate vs Non-Opiate
  - Short-acting/Long-acting
  - Opiate naïve or not
- III. Consider the risks and side effects
- IV. Assess the safest route of delivery
- V. If rotating opiates, follow guidelines

## Analgesics Fact Sheet

| Acetaminophen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Non-Steroidal Anti-Inflammatory Analgesics (NSAIDs) | Opioids | Antiepileptics | Antidepressants | Corticosteroids |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|----------------|-----------------|-----------------|
| <p><b>When to Use:</b></p> <ul style="list-style-type: none"> <li>Indicated for mild to moderate somatic and visceral pain as a single agent or combined with an opioid</li> <li>Treats fever, headache, muscle and general pain</li> <li>Oral, liquid, rectal and intravenous formulations</li> <li>Does not affect platelets</li> </ul> <p><b>When to Avoid:</b></p> <ul style="list-style-type: none"> <li>Should NOT be used in patients with liver impairment. MONITOR LIVER TESTS</li> <li>Narrow therapeutic ratio: Patients should be cautioned and should NOT use more than 4 gram/day (=8 extra strength tablets per 24 hours) WITH close monitoring or 3 gram/day unmonitored. NOTE: 2 extra strength 500 mg acetaminophen (Tylenol) tabs every 6 hours=4 grams. MINOR increases above recommended doses pose serious risk of hepatic necrosis and death</li> </ul> <p><b>NOTE:</b> Has no anti-inflammatory properties</p> |                                                     |         |                |                 |                 |

| Acetaminophen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Non-Steroidal Anti-Inflammatory Analgesics (NSAIDs) | Opioids | Antiepileptics | Antidepressants | Corticosteroids |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|----------------|-----------------|-----------------|
| <p><b>When to Use:</b></p> <ul style="list-style-type: none"> <li>Indicated for mild to moderate visceral and somatic pain as a single agent or combined with an opioid</li> <li>Indicated when treating inflammatory states in the musculoskeletal system</li> <li>Oral, liquid, topical and intravenous formulations</li> </ul> <p><b>When to Avoid:</b></p> <ul style="list-style-type: none"> <li>Bleeding risk, particularly to the gastrointestinal tract</li> <li>In combination with other anticoagulants such as warfarin or enoxaparin (Lovenox)</li> <li>Low platelet count</li> <li>Renal dysfunction</li> <li>Diabetes -high risk of renal dysfunction and failure</li> <li>Elderly with creatinine clearance under 30ml/min (common in people over 75 years of age)</li> <li>Congestive heart failure (additive cardiotoxicity and risk of renal failure)</li> <li>If patient is already on corticosteroids (increased bleeding risk with no increase in efficacy)</li> </ul> <p><b>Increased risk of toxicity can occur in the following situations:</b></p> <ul style="list-style-type: none"> <li>Higher dose and longer therapy</li> <li>Elderly and medically frail patients</li> <li>Patients with renal insufficiency</li> <li>Patients with prior gastritis, other gastrointestinal bleeding</li> <li>Patients on anticoagulation</li> </ul> <p>Long-term use must be weighed in terms of benefit vs. potential risk.</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>No NSAID has greater analgesic efficacy or safety profile than any other NSAID</li> <li>Celecoxib is the only remaining Cox-2 inhibitor on the U.S. market and has not been demonstrated to have greater analgesic efficacy or safety than other NSAIDs</li> </ul> |                                                     |         |                |                 |                 |



| Acetaminophen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Non-Steroidal Anti-Inflammatory Analgesics (NSAIDs) | Opioids | Antiepileptics | Antidepressants | Corticosteroids |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|----------------|-----------------|-----------------|
| <p><b>When to Use:</b></p> <ul style="list-style-type: none"> <li>Indicated for moderate to severe somatic and visceral pain as a single agent or combined with other synergistic drugs</li> <li>Includes dexamethasone (long-acting) and prednisone</li> <li>Widely used as a multipurpose analgesic including: bone pain, capsular pain (e.g. liver capsular stretch pain). Headache (raised intracranial pressure), bowel obstruction (due to tumor compression), although evidence base is limited</li> <li>Evidence supports the use of corticosteroids for improved appetite, well-being and fatigue</li> <li>Oral, liquid, intravenous, rectal subcutaneous, depot intramuscular injection formulations</li> </ul> <p><b>Serious side effects include:</b></p> <ul style="list-style-type: none"> <li>Early: <ul style="list-style-type: none"> <li>Agitation</li> <li>Delirium</li> <li>Hyperglycemia</li> <li>Fluid retention</li> <li>Hypertension</li> <li>Increased risk of infection</li> </ul> </li> <li>Late: <ul style="list-style-type: none"> <li>Adrenal insufficiency</li> <li>Myopathy</li> <li>Hyperglycemia</li> <li>GI bleeding</li> <li>Avascular necrosis</li> <li>Osteoporosis and fracture</li> <li>Increased risk of infection</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>Should not be combined with NSAIDs-increased risk of GI bleeding with no increase in efficacy</li> </ul> |                                                     |         |                |                 |                 |

| Acetaminophen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Non-Steroidal Anti-Inflammatory Analgesics (NSAIDs) | Opioids | Antiepileptics | Antidepressants | Corticosteroids |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------|----------------|-----------------|-----------------|
| <p><b>When to Use:</b></p> <ul style="list-style-type: none"> <li>Indicated for moderate to severe neuropathic pain as a single agent or combined with other synergistic drugs, including gabapentin and pregabalin</li> <li>Mainstay for treatment of neuropathic pain though evidence is mixed</li> <li>Oral formulations only</li> <li>Side effects are manageable for most patients</li> </ul> <p><b>Key Provisos:</b></p> <ul style="list-style-type: none"> <li>Dose adjustment in patients with renal failure or renal insufficiency (elderly) for gabapentin and pregabalin</li> <li>Can cause sedation, confusion, ataxia, edema</li> <li>Drug-drug interactions are generally well-tolerated</li> </ul> |                                                     |         |                |                 |                 |



# MME/OME

## Equianalgesic Conversion Table

| Drug Name     | Equianalgesic Dose |                 | Oral to Parenteral Ratio |
|---------------|--------------------|-----------------|--------------------------|
|               | Oral (mg)          | Parenteral (mg) |                          |
| Morphine      | 25                 | 10              | 5:2                      |
| Hydromorphone | 5                  | 2               | 5:2                      |
| Oxycodone     | 20                 | n/a             | n/a                      |
| Hydrocodone   | 25                 | n/a             | n/a                      |
| Oxymorphone   | 10                 | 1               | 10:1                     |

### Potency ratios:

- oral morphine: oral hydromorphone is 5:1
- oral morphine: oral oxycodone is 1.25:1
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**Oral hydromorphone is 5 times as potent (mg per mg) as oral morphine**

This conversion table is adapted from: *McPherson ML. Demystifying Opioid Conversion Calculations: A Guide for Effective Dosing, 2nd ed. American Society of Health-System Pharmacists, Bethesda, Maryland, 2018.*



# Case 1

- ▶ The patient is a 75 year-old male with a diagnosis of metastatic lung cancer with documented bone metastases. He initially presented with mild-to-moderate pain, which was effectively managed with **Norco 5/325 mg** at a dose of 3 or fewer tablets per day as needed. Over time, the patient reported increasing pain severity, necessitating an increase in his medication frequency and dose. He is now taking **two tablets of Norco (10/650 mg total) every four hours**, yet he continues to experience significant pain, rated **8/10** on a numerical pain scale.



# General Principles: Opiate Rotation

1. Compute MME/OME
2. Dose reduce 25-50% for incomplete cross tolerance
3. Long-acting agent 100-66.7% of 24 hour OME
4. Short-acting 5-15 % of 24 hours long-acting dose
5. Frequent monitoring and titration are essential





# General Principles: Opiate Rotation

1. Compute MME/OME 60mg
2. Dose reduce 25-50% for incomplete cross tolerance 45mg
3. Long-acting agent 100-66.7% of 24 hour MME/OME 30 mg
4. Short-acting 5-15 % of 24 hours long-acting dose 3-4.5 mg
5. MS Contin 15 mg BID
6. MS IR 7.5 mg q 4 prn (or)
7. Norco 5/325 q 4 prn
8. Dexamethasone 4 mg TID
9. Senna-S prn
10. Frequent monitoring and titration are essential





## Case 2

- A 63 year-old patient with metastatic breast cancer involving the liver and bones initially had well-controlled pain with oxycodone controlled-release 30 mg TID and oxycodone immediate-release 15 mg Q4H PRN. However, due to escalating pain levels reaching 9/10, an opioid rotation to morphine sulfate extended-release (MS Contin) was considered to optimize analgesia and manage opioid tolerance.



# General Principles: Opiate Rotation

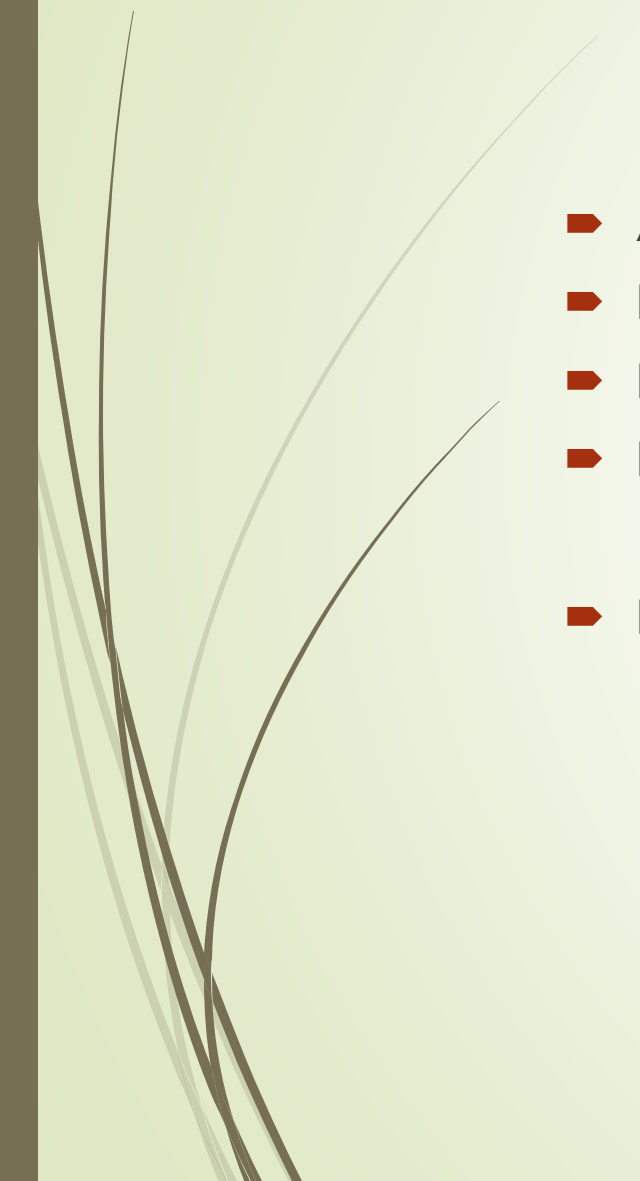
1. Compute MME/OME
2. Dose reduce 25-50 for incomplete cross tolerance
3. Long-acting agent 100-66.7% of 24 hour OME
4. Short-acting 5-15 % of 24 hours long-acting dose
5. Frequent monitoring and titration are essential

# General Principles: Opiate Rotation

1. Compute MME/OME
  - $(30 \text{ mg} \times 3 = 90) + (15 \text{ mg} \times 6 = 90) 180 \times 1.25 = 225 \text{ mg}$
2. Dose reduce 25-50% for incomplete cross tolerance 168.75 mg
3. Long-acting agent 100-66.7% of 24 hour OME 112.5 mg
4. Short-acting 5-15 % of 24 hours long-acting dose 11.25-16.875 mg
5. MS Contin 60 mg BID
6. MS IR 15 mg q 2 prn
7. Dexamethasone 4 mg tid
8. Senna-S prn
9. Frequent monitoring and titration are essential



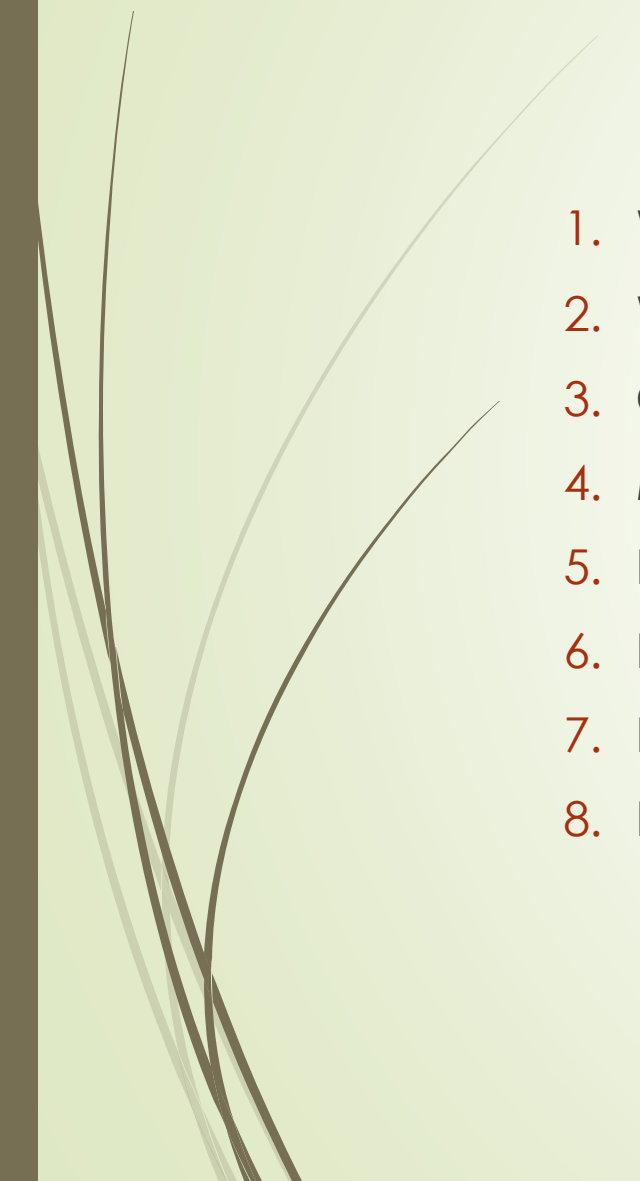
# Miscellaneous



- ▶ Always add a bowel regimen
- ▶ Don't forget about Tylenol and NSAIDS
- ▶ Don't forget about Dexamethasone
- ▶ Don't forget about adjuncts
  
- ▶ Don't forget about suffering and total pain
  - ▶ Anxiety
  - ▶ Grief
  - ▶ Depression
  - ▶ Existential crisis



# General Principles



1. When in doubt reach out
2. What is the source/nature of the patient's pain
3. Calculate Morphine Equivalence MME/OME
4. Maximize one opiate before adding another
5. Frequent monitoring and titration are essential
6. Don't forget Tylenol/non-opiate analgesics
7. Don't forget adjuncts
8. Don't forget bowel regimen



# Barriers to Pain Control & Management

- Fear of diversion
  - Fear of overdose
  - Fear of substance use disorder
  - Fear of legal and regulatory entanglements
  - Fear of prescribers' lack of mastery
- 
- Armed with **Knowledge** you can combat Fear
  - What is your experience?





# References

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