Taking the Pain out of Pain Management

Pharmacological Management of Pain

Host and Moderator: Amanda Tevelde

Presenters: Sue Martin, RN

Sherry Hubbert, RN

Date: September 28th, 2023

Land Acknowledgement

We would like to acknowledge that the land which we are gathered on today is the traditional territory of the Anishinaabek Nation; specifically, the Chippewa Tri – Council comprised of the Chippewas of Beausoleil, Rama and Georgina Island First Nations and more recently the Mississaugas of the Credit River First Nation. Ontario is covered by 46 treaties and other agreements and is home to many Indigenous Nations from across Turtle Island, including the Inuit and the Métis. These treaties and other agreements, including the One Dish with One Spoon Wampum Belt Covenant, are agreements to peaceably share and care for the land and its resources. Other Indigenous Nations, Europeans, and newcomers were invited into this covenant in the spirit of respect, peace, and friendship.

Most of us have come here as settlers, immigrants, or newcomers in this generation or generations past. **We are all Treaty people.** Every day we are mindful of broken covenants, and we strive to make this right. We commit to collaborating based on the foundational assumption that Indigenous Peoples have the power, strength, and competency to develop culturally specific strategies for their communities. We are dedicated to honouring Indigenous self-determination, history, and culture, and are committed to moving forward in the spirit of reconciliation and respect with all First Nation, Métis and Inuit people.

The Palliative Care ECHO Project

The Palliative Care ECHO Project is a 5-year national initiative to cultivate communities of practice and establish continuous professional development among health care providers across Canada who care for patients with life-limiting illness.

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Introductions

Host and Moderator

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Thank you for joining us today!

Please remember to complete the satisfaction survey following todays session.

Please note:

The focus of this presentation is on the adult population. The pediatric population has its own unique challenges and interventions for pain and symptom management that are beyond the scope of this presentation.

Learning Objectives

By the end of the session, participants will be able to:

To understand pain and its complexities by reviewing the types of pain.

Understand the principles of pharmacological pain management.

Advance your understanding & inspire your approach to the art & science of palliative/end-of-life pain management.

What is Pain?

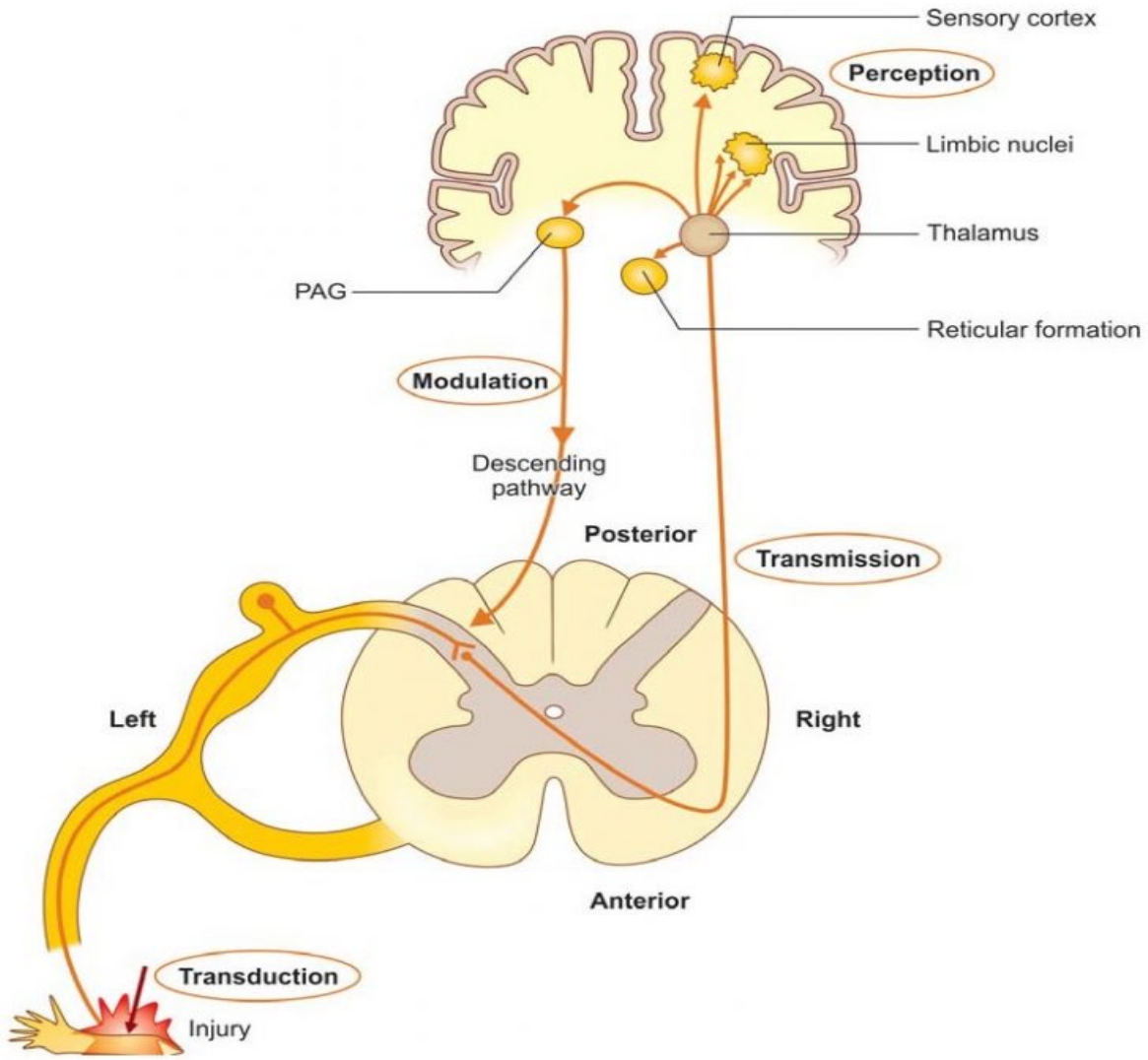
“An unpleasant sensory and emotional experience”

- Pain is whatever the patient says it is.

- Pain is subjective.

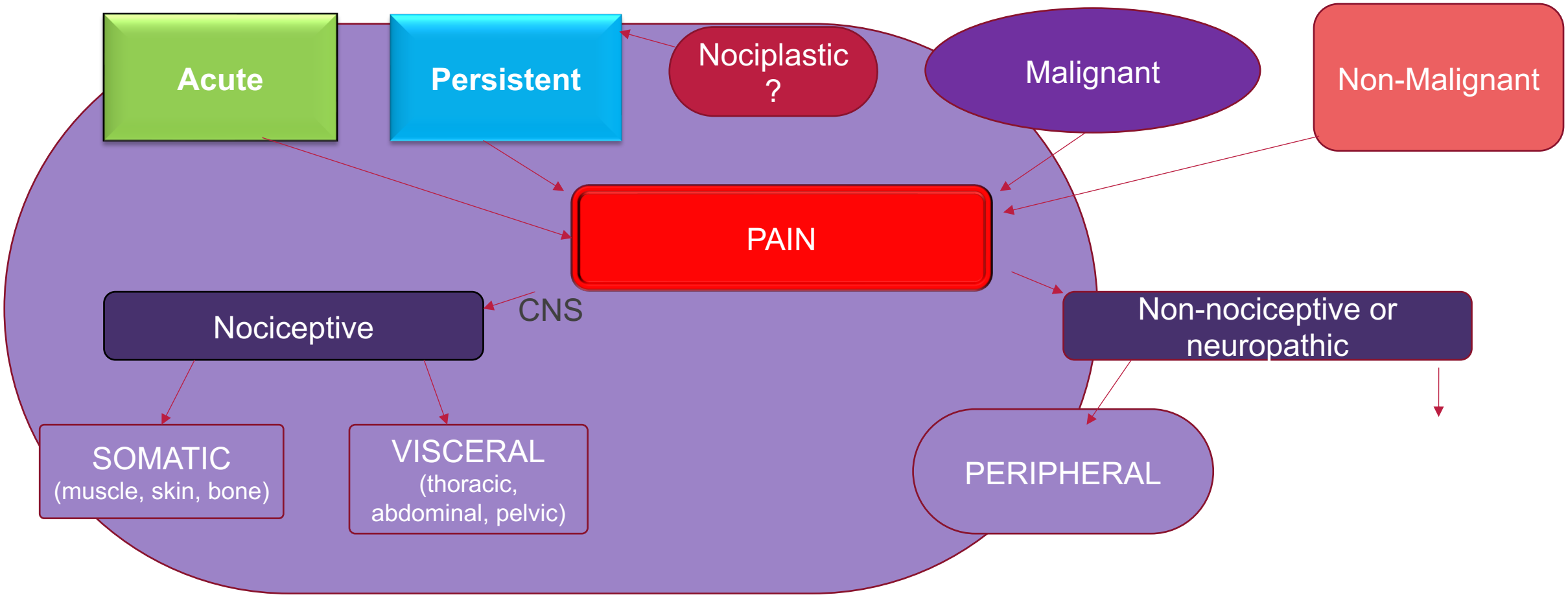
The Pain Pathway

1) Transduction
2) Transmission
3) Perception
4) Modulation



(www.learnpain.org)

Classification of Pain



Pain Management Overview

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NSMHPCN North Simcoe Muskoka Hospice Palliative Care Network

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Goals of Pain Management

- It is imperative that we listen to the patient's expression of pain and the impact of the pain on their life
- Each person's experience at the end of life is unique
- Goal of quality pain management is to focus on alleviating disease symptoms and improving quality of life.
- Pain management is multifactorial and may require many different interventions

Barriers to Effective Pain Control

- Barriers are related to healthcare providers, patients and families
- Examples:
  - Lack of knowledge and skills of the healthcare provider to assess and manage pain
  - Lack of understanding of the health care provider, patient, and/or family surrounding pain and its treatment
  - Lack of self-awareness from the health care providers, patients, and/or families of these gaps or their bias toward pain
  - Multiple myths surrounding the use and misuse of opioids

Failure to Effectively Manage Pain

- May result in needless suffering and poor quality of life
- Up to 85% of pain syndromes can be relatively well controlled with adherence to the basic principles and guidelines of pain management
- If acute pain is not well managed, physical changes in the pain centers of the brain occur and may lead to chronic pain syndromes

Special Considerations in Pain Management

- Neurotoxicity
- Assessing pain in the cognitively impaired
- Assessing a person who is unresponsive
- Liver and renal impairments
- Frail elderly
- Pain Crisis
- Addiction, substance misuse

Medication Selection

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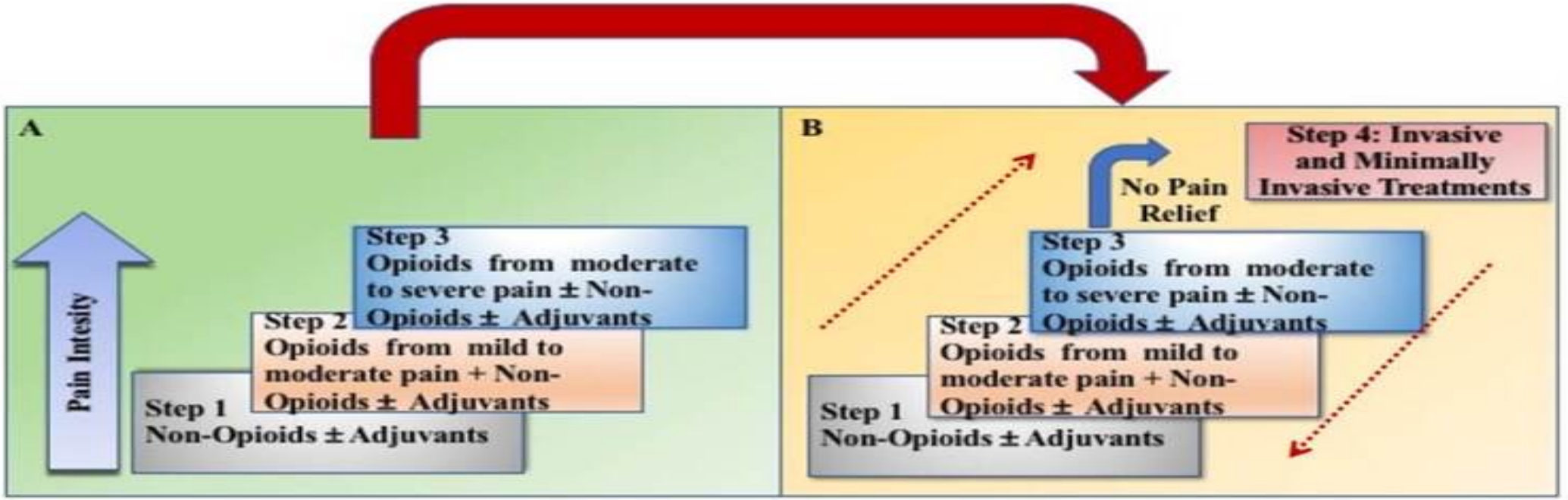
WHO Analgesic Ladder



Transition from the original WHO three-step analgesic ladder (**A**) to the revised WHO fourth-step form (**B**). The additional step 4 is an "interventional" step and includes invasive and minimally invasive techniques. This updated WHO ladder provides a bidirectional approach.

Who analgesic ladder - statpearls NCBIbookshelf.(n.d.).https://www.ncbi.nlm.nih.gov/books/NBK554435/#!po=1.31579

Principles of Medication Use

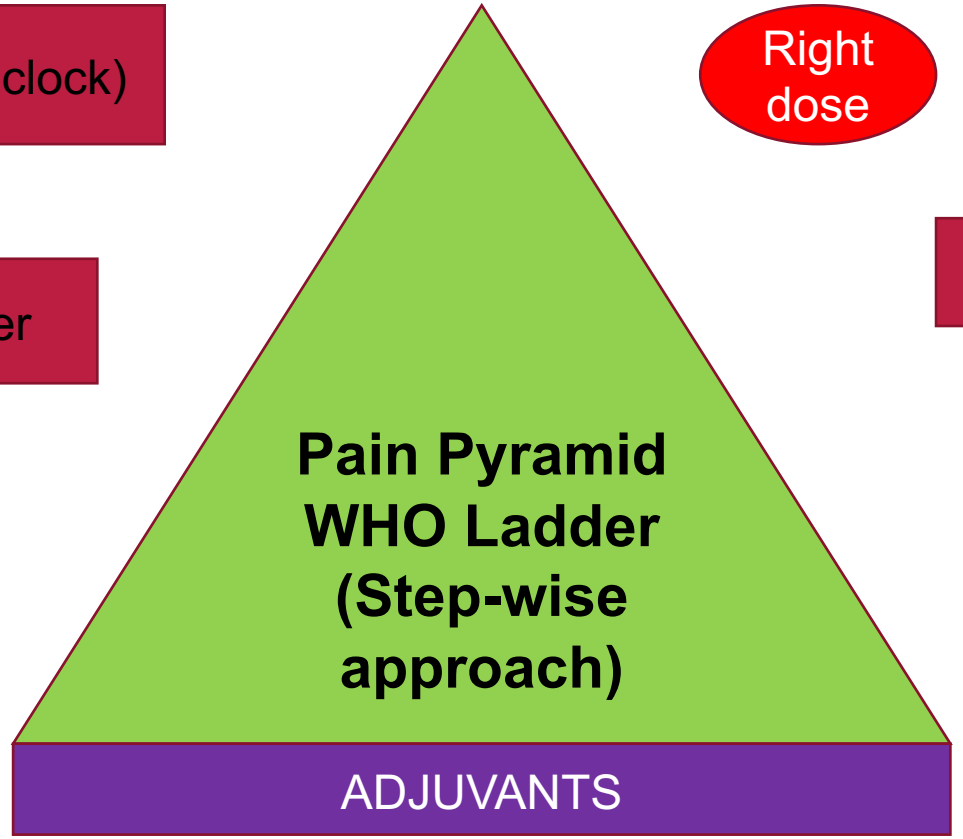
- ATC

ATC (around the clock)

By the ladder

Right drug

Management of opioid induced constipation



Right dose

For the individual

By mouth

With attention to detail

Right time

Opioid Analgesics

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Opioid Types

1. **Natural:**

   Codeine, Morphine

2. **Semi-Synthetic:**

   Oxycodone, Hydromorphone, Heroin

3. **Synthetic:**

   Fentanyl, Methadone

Overview of Opioids

- Major medications used for relieving pain
- No fixed upper dosage limit (unless combined with acetaminophen)
- Absorbed well from the GI tract, disperses widely in the body, and crosses the blood-brain barrier
- Duration of action depends on protein binding, distribution in cerebral spinal fluid and metabolism

Common Opioids

- Morphine: Medication of choice recommended by WHO and the standard against which all other analgesics are measured
- Hydromorphone: A lower dose than morphine is required to have the same effect
- Oxycodone: Often combined with acetaminophen
- Codeine: Often combined and approximately 10% of patients of Caucasian descent do not have the enzyme required to convert to morphine in the body (it may be better used for cough suppression)

Initiating Opioids: Starting Doses

- Morphine 5-10 mg PO q4hr with 2.5 -5mg PO q1h PRN
  - If opioid naïve, elderly or frail, consider a starting dose of 2.5mg PO q4h.

- Hydromorphone 1-2 mg PO q4hr with 0.5-1mg PO q1h PRN
  - If opioid naïve, elderly or frail, consider a starting dose of 0.5 mg PO q4h

Initiating Opioids: Starting Doses

- Oxycodone 2.5 -5mg PO q4hr with 1-2.5mg PO q4h PRN
  - If opioid naïve, elderly or frail, consider a starting dose of 1-2.5mg PO q4h
- Codeine 15-30 mg PO q4h
  - If opioid naïve, elderly or frail, consider starting dose 8-15mg PO q4h
- Add breakthrough dose of 10% of the total daily dose q1h PO PRN

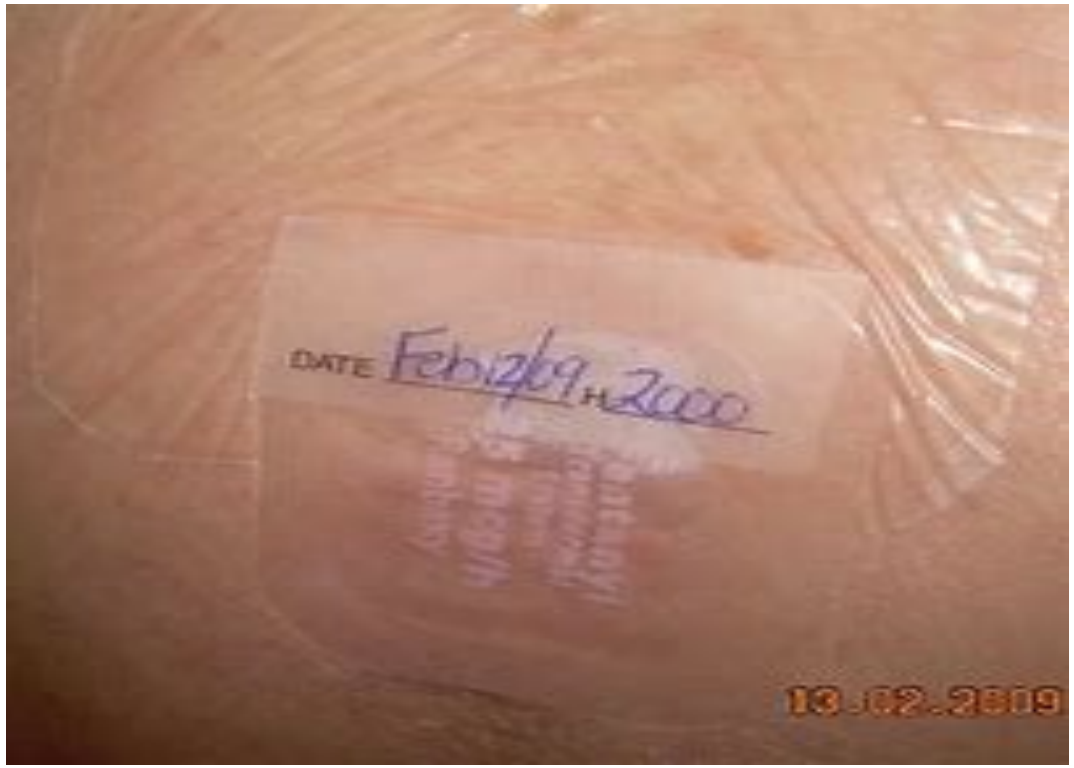
Methadone

- Synthetic opioid
- Agonist of opioid mu receptors, antagonist at NMDA receptors, some antagonist effect at serotonin and norepinephrine receptors as well
- Good for nociceptive and neuropathic pain, bony pain or complex pain syndromes but usually first choice
- Good option for opioid neurotoxicity or ESRD as no active metabolites, primarily biliary elimination (lower and slower dosing or avoid altogether in ESLD)
- High lipophilicity
- 80-90% bioavailability from PO route with rapid stomach absorption

Methadone

- Onset of action is 30-60 minutes,
- Methadone has an extremely long and variable half-life (24 to 190 hours depending on the individual)
- May take 5+ days to achieve steady state
- Approximately 10x more potent than morphine
- Starting dose 2.5mg PO q8h or 12h
- For patients who are frail, elderly, or have liver disease, consider 1mg PO at once daily at bedtime or q12h to start
- Breakthrough dose is usually another opioid, it is rarely a small dose of methadone q4h PRN due to risk of tissue accumulation
- Titrate SLOWLY
- Need a baseline ECG and consider drug interactions

Transdermal Patches



Fentanyl Patch

A fentanyl patch is an excellent medication choice for chronic stable pain and is not recommended for acute pain that requires rapid titration of doses

Not recommended for opioid Naïve patients!

- Dosage: A 25 mcg patch is equivalent to morphine 60-134 mg/day.
- Patch care and placement: Apply to dry, non-hairy skin on the torso or upper arm, and hold firmly in place for 30 seconds.

DO NOT CUT PATCHES OR USE OCCLUSIVE DRESSINGS BENEATH THEM TO HALVE THE DOSE

Butrans (Buprenorphone) Patch

- An opioid patch to treat severe, constant pain requiring around the clock medication
- Patch is worn for 7 days
- Do not use if there is a patient history of asthma/COPD, bowel obstruction or adhesions
- Should not be used for opioid naïve patients, must be stable pain (not an acute crisis)

Most Common Side Effects

- Nausea and Vomiting – usually resolved within 24 - 48 hours
- Constipation – ongoing, will require routine laxatives
- Sedation – usually resolved within 24 - 48 hours

Other Possible Side Effects

- Respiratory Depression - rare with proper titration of dose
- Pruritus
- Urinary Retention
- Myoclonus
- Altered Cognitive Function
- Diaphoresis

Breakthrough Medication

- Frequent breakthrough dosing requires an increase to the routine doses
- Always use immediate-relief products for breakthrough pain
- Choose the same route and opioid as the routine opioid whenever possible
- A recommended Breakthrough dose is 10% of the daily dose given q1hour PRN

  For example if someone takes 100mg PO morphine per 24 hours, the breakthrough should be morphine 10 mg PO q1hour PRN

Titrating the Dose of Opioid

- May need to titrate dosage up or down to maximize pain management
    - consider down-titration post chemotherapy and radiation treatment if goal of those therapies was comfort (i.e. radiation for bone metastases)
- To titrate dose up: add the total amount (in mg) of ALL types of opioids given over the previous 24h, including routine and breakthrough doses
- If different opioids are being used, convert to one type using the equianalgesic table

Titrating the Dose of Opioid

- Divide the total mg to obtain the appropriate dose and interval to be given routinely (either q12hr or q4hr around-the-clock dosing)
- Calculate the new breakthrough dose based on the new daily total
- Continue to titrate up until pain is managed or until side effects occur (opioid neurotoxicity)

End of Dose Failure

- 5-10% of patients on long-acting opioids can have end-of-dose failure which is where the pain worsens several hours prior to the next dose
- The most common cause is an inadequate dose of the regular regimen
- The first step is to increase the dose without changing the time interval
- If not effective return to the previous dose and reduce the time interval (if on Fentanyl change to every 2 days)

Opioid Neurotoxicity

Signs and symptoms of opioid neurotoxicity:

- Sedation
- Hallucinations (usually visual)
- Confusion, cognitive impairment, and/or agitation
- Myoclonus (twitching or clonic spasm of a muscle or group of muscles)
- Allodynia - hyperalgesia

Management of Opioid Neurotoxicity

- Hydration if related to Morphine or Hydromorphone toxicity or related to dehydration.
- Reduce opioid dose/opioid rotation
- Reduce opioid dose but add an adjuvant
- Change route of administration
- Treat toxicity symptomatically (control myoclonus with Gabapentin, baclofen or benzodiazepines)

Do not use Narcan to treat unless is due to a significant overdose.

Equianalgesic Table

Drug	Po Dose	PO/SC/IV Ratio	SC/IV dose
Morphine	10 mg	2:1	5 mg
Codeine	100 mg	2:1	50 mg
Oxycodone	5mg	--	--
Hydromorphone	2 mg	2:1	1 mg
Methadone	1 mg	---	Too irritating
Fentanyl/Infusion	--	--	0.05 mg
Fentanyl Patch (25 mcg)	90 mg	--	

Morphine 10mg po=Hydromorphone 2mg po

Morphine 10 mg po = Codeine 100 mg po

Morphine 10mg po= Oxycodone 5 mg po

Morphine 10 mg po = Methadone 1 mg po

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The Pallium Palliative Pocketbook 2nd edition 5-50

Opioid Rotation

- A switch from one opioid to another in an effort to improve clinical outcomes (increase benefits or reduce harm) or a change in route of administration (i.e. need to switch from oral to subcutaneous and was on oxycodone)
- The selection of a starting dose of the new opioid must be informed by an estimate of the relative potency between the current opioid and the new one (Equi-analgesic conversion)
- Consider incomplete cross-tolerance when switching to a different opioid and reduce by 30- 50%

Opioid Rotation

Indications that rotation may be necessary:

- Unmanageable side effects
- Inability to swallow
- Route of administration availability or efficacy
- Inadequate analgesia
- Opioid Neurotoxicity
- Renal or Hepatic considerations

Pumps (CADD and PCA)

- CADD: Continuous Ambulatory Delivery Device
- PCA: Patient Controlled Analgesia
- Slowly releases a prescribed medication (antibiotics, opioids, hydration o sedation) at a controlled rate
- Basal rate is the hourly delivery of the medication and the bolus is the breakthrough dose
- Breakthrough (bolus) dose: is a prescribed dose at a controlled interval of delivery (i.e. every 15, 20, 30 or 60 minutes); patient can push the button to administer the bolus dose as often as they want, but the pump will only administer at the prescribed time interval

Severe Pain & Pain Crisis

Presenters: Sue Martin, RN

Sherry Hubbert, RN

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Treatment of Severe Pain

For opioid naïve patients:

- Oral:

  Morphine 5 - 10 mg PO q4h and 5mg PO q1h PRN or

  Hydromorphone 1 - 2 mg PO q4h and 1 mg PO q1 to q2h PRN

- Subcutaneous/Intravenous:

  Morphine 2.5 - 5 mg SC/IV q4h and 2.5 mg q30min SC/IV PRN or

  Hydromorphone 0.5 - 1 mg SC/IV q4h and 0.5 mg q30min SC/IV PRN

Treatment of Severe Pain

- **For patients already taking opioids:**
- If dosing is q4h (immediate-release), increase the regular and breakthrough doses by 25%
- If dosing is q12h (sustained-release/extended-release), increase the routine dose by 25%, and change the breakthrough doses accordingly:
  - Ensure that the breakthrough doses are 10-15% of the daily dose and that the frequency of the breakthrough dose is q1h PRN if oral and q30min PRN if subcutaneous
- Adjust the regular and breakthrough opioid dose every 24h to 48h to reflect the previous 24h total dose received until pain is managed

Pain Crisis

A pain crisis can occur at any time and requires prompt use of analgesics, adjuvant therapies, reassurance and a calm atmosphere.

Consider consultation with a palliative care or cancer pain specialist.

- If IV access is present:
  - and the person is opioid naïve, give stat morphine 5 to 10 mg IV q10min until the pain is relieved
  - and the patient is taking oral opioids, convert the PO dose to IV, and administer IV q15min until pain is relieved

Pain Crisis

- If IV access is not present:
  - and the patient is opioid naïve, give stat morphine 5-10 mg S/C q30min until the pain is relieved
  - and the patient is taking oral opioids, convert the PO dose to S/C and administer q15min until pain is relieved
- Monitor carefully and titrate the dose by 25% every 1 - 2 doses until the pain is relieved

Do not try to manage a pain crisis with a long-acting opioid!

Non-Opioid Analgesics

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Acetaminophen

- Appropriate for mild to moderate pain (bone pain or minor aches) and fever
- Maximum dose per 24 hours is 4 grams (4000mg)
  - 2.6 grams (2600mg) is the recommended maximum dose per 24 hours for the elderly (over 75)
- Use with caution with existing liver disease
- Can be combined with other opioids
  - *When using Percocet, watch daily acetaminophen levels and be aware of other drugs containing acetaminophen*

NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)

- Can be used for all types of cancer/chronic pain including neuropathic, boney metastases, arthritis, osteoarthritis, etc.
- Risk for serious gastrointestinal event: do not use or use extreme caution in individuals with a history of GI bleed
- Decadron and NSAID together increase risk of GI bleed
- Use cautiously in elderly and individuals with renal impairment
- Add a PPI (i.e. Pantoloc) prophylactically

Corticosteriods

First line adjuvant for bone pain and nerve pain!

- For all types of cancer pain and bone, neuropathic and visceral pain
- Especially useful for suspected/known nerve compression or spinal cord compression and brain metastases, usual dose is 4 – 16 mg per day
- Should be given in the morning as can be stimulating
- Useful in pain crisis
- Use with caution in diabetics and individuals with a history of psychosis
- Avoid concurrent use of NSAIDs due to 4x increased risk of GI bleed

Tricyclic Antidepressants (TCA)

- Useful in treatment for neuropathic pain
- TCAs block presynaptic re-uptake of serotonin and noradrenaline in the CNS
- Amitriptyline/Nortriptyline are most commonly used
- The tetracyclic antidepressant Mirtazipine (Remeron) can be also be used
- Do not use with MAO inhibitors

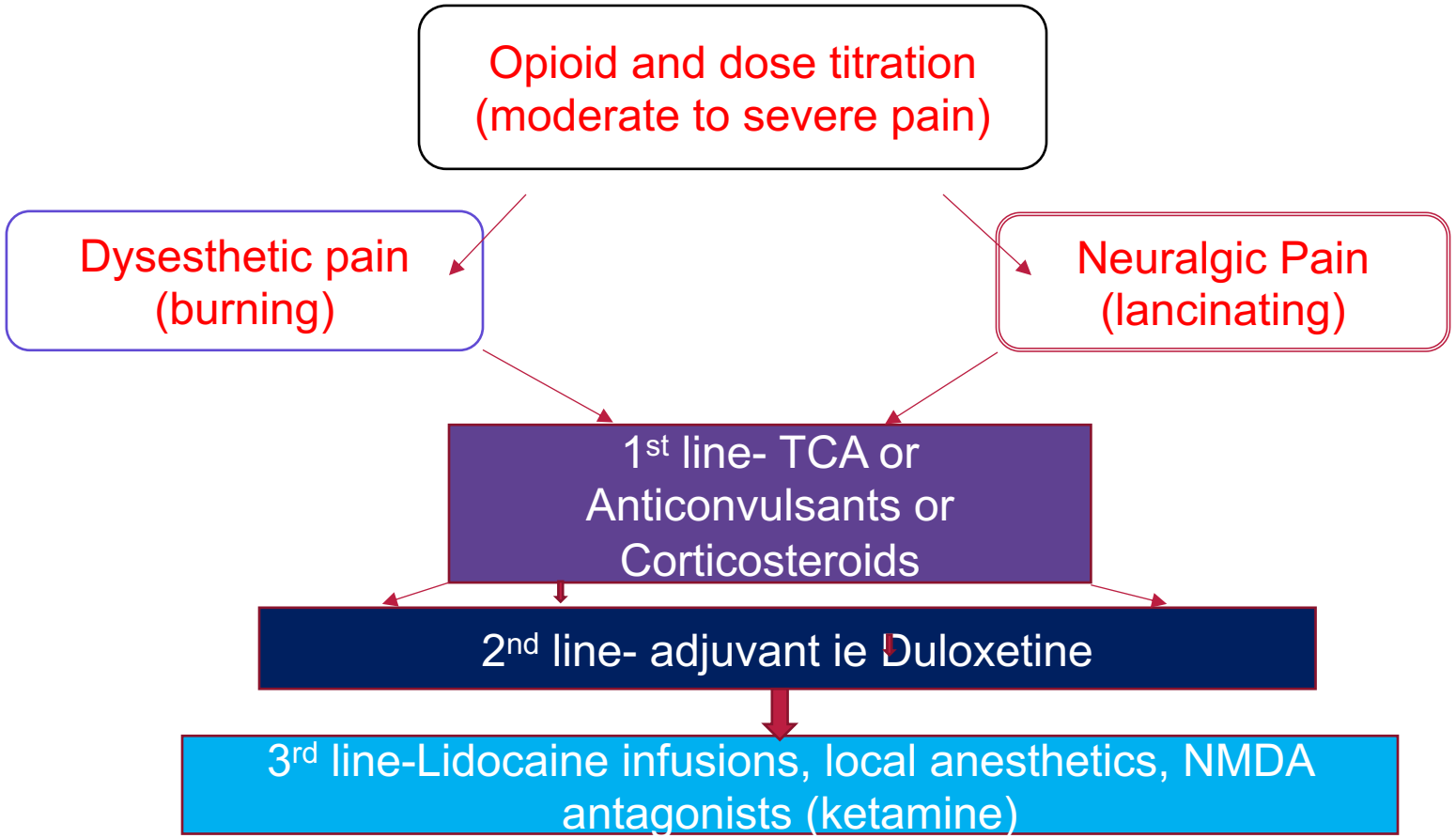
Bisphosphonates

- Used for bone pain from metastasis, hypercalcemia, and Paget's disease to reduce the incidence of skeletal-related events in patients with bone metastases
- Takes several doses to have any effect on pain management
- Can take orally but is generally poorly absorbed

Anticonvulsants

- First-line agent in neuropathic pain
- Mechanism of action is unclear
- Lower doses used in renally impaired individuals
- Gabapentin: usually dose starts at 100mg PO BID to TID, can slowly titrate to as high as 3000mg total per day
- Pregablin (Lyrica): titration can happen quickly, start at 75mg PO at HS, then increasing to BID. Can be increased to 150mg BID. The maximum total per day is 300mg, can see up to 600mg total per day

Adjuvants for Neuropathic Pain



Other Medications to Consider

- Baclofen: used in pain such as painful muscle spasms and hiccups, colicky pain. Dose: 5mg PO BID - TID
- Psychostimulants: used to reverse opioid sedation, i.e. Methylphenidate (Ritalin) Need to take early in the day to avoid insomnia. Not clear if they have any inherent analgesic properties. 5 -10mg at breakfast and lunch
- Cannabinoids: No clear evidence for use in palliative care, may have some benefit for spasms in multiple sclerosis

Other Medications to Consider

- SSRIs: 2nd line agent for neuropathic pain
- Lidocaine infusions
- NDMA antagonists (Ketamine): supports hemodynamic function and is not a respiratory depressant. It has shown promise for difficult-to-treat pain conditions, can be effective in reducing acute postoperative pain, and may reduce overall opioid consumption (Allen & Ivester, 2017)

Adjuvants for Visceral Pain

Liver Metastases: Corticosteroids, i.e. Dexamethasone 2-8mg OD to BID

Malignant Bowel Obstruction: Octreotide 200- 300mcg SC TID and Dexamethasone 8mg

Colic: Hyoscine Butyl Bromide S/C (Buscopan)

Case Study

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Case Study: Meet Betty BeBrave

- 63 year old woman with a primary diagnosis of Ovarian Cancer
- She is divorced, lives alone in an apartment
- She has a very supportive son, daughter-in-law and grandchildren that live in the same town
- Smoker x 35 years
- Has a secondary diagnosis of COPD

Current ESAS-r & PPS Scores

- PPS 50%
- Pain: 8/10
- Nausea: 8/10
- Appetite: 5/10
- Tired: 6/10
- Depressed: 6/10
- Anxiety: 7/10
- Sense of Well being: 6/10
- Drowsiness 0/10
- Shortness of Breath: 2/10
- Constipation: 6/10

Current Pain Management

- Percocet 2 tabs PO q4h routinely (5/325)
- Statex 5mg PO q4h PRN
- Has taken 8 breakthrough doses of Statex in the last 24 hours

What could be Causing Betty's Pain?

- Constipation or fecal loading
- Malignant bowel obstruction (common with ovarian cancer)
- Poor GI motility
- Opioid side effect
- Metabolic causes (uremia, hypercalcemia, dehydration)

Physical Assessment

- No evidence of thrush
- Bowel sounds faint, bowel movement 0/3, hard small stools (Bristol type 1)
- Pain assessment with OPQRSTUV finds:
  - Lower abdominal pain 8-10/10 at its worst when standing or walking
  - Pain is 4-6/10 when laying down
  - Feeling of pressure with constant sharp pain, constant dull ache through the lower abdomen
  - Feeling a sense of fullness

What Orders Would You Expect?

- Abdominal x-ray
- NPO until results are available
- Medication to manage nausea
- Rotate from Percocet to a s/c opioid with appropriate BT dosing

Conversion

- Percocet 5/325, 2 tabs q4h = 60mg of oxycodone
- Assess opioid incomplete cross-tolerance, we will use 50% reduction (=30mg of oxycodone) 60 - 30 = 30mg oxycodone

- **Step 1**: convert oxycodone 30mg to Morphine (=60mg)
- **Step 2:** total breakthrough Morphine in 24 hrs (5mg x 8 doses = 40mg)
- **Step 3:** total 24 hr Morphine is 60mg + 40mg = 100mg total oral morphine

Conversion

- **Step 4:** change route from PO to S/C (=50mg)
- **Step 5:** 50 divided by 24 hours to find the hourly rate = 2.08mg S/C q1h (round down Morphine 2mg s/c q1h)
- **Step 6:** Calculate the breakthrough dose: 10% of 24hr total given q1h: 5mg s/c q1hr or 2.5mg q30 min or 1.7mg q20 min

The key to great pain management is ongoing assessment and a multidisciplinary approach to care!

Questions?

We hope you enjoyed todays session. Please remember to complete the satisfaction survey.

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