

CASE EXAMPLES

For all of these cases, remember nonpharmacologic approaches as a possibility and remember to consider possible barriers to good use of pain interventions

Case 1: Mrs. D is a 45-year-old attorney who has breast cancer metastatic to bone. She is comfortable on a continuous infusion of morphine at 6-mg/hr sc. Your goal is to change to oral medications before discharging her home. What should your prescription be?

Answer

Figure out total daily dose of IV morphine

$$6 \text{ mg/hr} \times 24 \text{ hours} = 144 \text{ mg/day IV morphine}$$

Set up a ratio using values from the table

$$144 \text{ mg/day IV morphine} = 1 \text{ mg IV morphine}$$

$$X \text{ mg/day oral morphine} = 3 \text{ mg oral morphine}$$

Solve for X

$$X = 442 \text{ mg/day oral morphine}$$

Divide by 2 for bid formulation of extended-release morphine, or divide by 6 for immediate-release morphine administered every 4 hours

**Sig: 200 mg extended-release morphine po bid, or
70 mg immediate-release morphine po q 4h RTC**

Also prescribe a breakthrough dose of 5% to 15% of total daily dose

Sig: 20–60 mg immediate-release morphine po q 1h prn

Do not forget a stimulant laxative!

Case 2: Mr. T is a 73-year-old man with lung cancer, a malignant pleural effusion, and chronic chest pain. He has undergone therapeutic thoracentesis and pleurodesis. He is currently receiving meperidine 75 mg im q 6h for pain. You want to change to oral morphine. Without adjusting for cross-tolerance, what dose and schedule would you choose?

Answer

Figure out total daily dose

$$4 \times 75 \text{ mg im meperidine} = 300 \text{ mg/day im meperidine}$$

Set up ratio from the table

$$300 \text{ mg/day im meperidine/day} = 50 \text{ mg im meperidine}$$

$$X \text{ mg/day po morphine/day} = 15 \text{ mg po morphine}$$

Solve for X

$$X = 90 \text{ mg/day po morphine}$$

Decide on schedule and formulation

Sig: sustained release morphine 45 mg po bid

Remember breakthrough dose

Sig: 5–15 mg po immediate-release morphine q 1h prn

Remember the stimulant laxative

Case 3: Ms. M is a 41-year-old teacher who has ovarian cancer with ascites and has been taking 2 tablets of acetaminophen /hydrocodone (500mg/5mg) every 4 hours and 1 tablet of acetaminophen/oxycodone (325mg/5mg) every 6 hours for pain relief. Morphine makes her nauseated. You are concerned about acetaminophen toxicity and want to change to an alternative oral approach. Without adjusting for partial cross-tolerance, what dose of hydromorphone would you choose?

Answer

1. Figure out total daily dose of each opioid

$$2 \text{ tablets} \times 5 \text{ mg hydrocodone/tablet} \times 6 = 60 \text{ mg/day hydrocodone/day}$$

$$1 \text{ tablet} \times 5 \text{ mg oxycodone/tablet} \times 4 = 20 \text{ mg/day oxycodone/day}$$

2. Set up ratios from the table

$$60 \text{ mg/day oral hydrocodone} = 15 \text{ mg oral hydrocodone}$$

$$X \text{ mg/day oral hydromorphone} = 4 \text{ mg oral hydromorphone}$$

$$20 \text{ mg/day oral oxycodone} = 10 \text{ mg oral oxycodone}$$

$$X \text{ mg/day oral hydromorphone} = 4 \text{ mg oral hydromorphone}$$

3. Solve for X in each case

$$X = 16 \text{ mg/day po hydromorphone}$$

$$X = 8 \text{ mg/day oral hydromorphone}$$

4. Add them together for a total of 24 mg/day oral hydromorphone

5. Decide on schedule

Sig: Hydromorphone 4 mg po q 4h RTC

6. Don't forget breakthrough

Sig: Hydromorphone 1–2 mg po q 1h prn

7. Do not forget a stimulant laxative

Case 4: Mrs. A is hospitalized and receiving adequate pain control with meperidine 120 mg intramuscularly every 3 hours. She is now able to take nutrition and medications by mouth. Correcting 25% for incomplete cross-tolerance, what dose and schedule of oral hydromorphone would you prescribe to provide her with an approximately equal amount of analgesia?

Answer c. 8 mg po q 4h

Calculating the Answer

1. Figure out total daily dose of each opioid

$$120 \text{ mg} \times 8 = 960 \text{ mg IM meperidine/day}$$

2. Set up ratios from the table

$$\frac{960 \text{ mg/day IM meperidine}}{X \text{ mg/day oral hydromorphone}} = \frac{50 \text{ mg IM meperidine}}{4 \text{ mg oral hydromorphone}}$$

3. Solve for X

$$X = 76.8 \text{ mg/day po hydromorphone}$$

4. Decide on schedule

$$12 \text{ mg po q 4 h}$$

6. Adjust 25 % for incomplete cross-tolerance

Sig: Hydromorphone 8 mg po q 4 h

Case 5: Mr. B has been taking 3 capsules containing oxycodone (5 mg per capsule) and acetaminophen every 3 hours at home for relief of bone pain from metastatic lung cancer. He is now admitted to the hospital with a chemotherapy-induced aplasia. You do not want him taking an antipyretic (acetaminophen). Without correcting for partial cross-tolerance, how much oral morphine elixir would you prescribe to provide analgesia similar to that which he received from the oxycodone?

Answer: d. 30 mg po q 4h

Calculating the Answer

1. Figure out total daily dose of opioid

$$3 \text{ tablet} \times 5 \text{ mg oxycodone/tablet} \times 8 = 120 \text{ mg oxycodone/day}$$

2. Set up ratio from the table

$$\frac{120 \text{ mg/day oral oxycodone}}{X \text{ mg/day oral morphine}} = \frac{10 \text{ mg oral oxycodone}}{15 \text{ mg oral hydromorphone}}$$

3. Solve for X

$$X = 180 \text{ mg/day oral morphine}$$

5. Decide on schedule

Sig: Morphine 30 mg po q 4h RTC

Case 6: Mrs. C has been taking codeine 60 mg by mouth every 4 hours and methadone 40 mg orally every 6 hours, to adequately control abdominal pain from bulky retroperitoneal metastases. She is now admitted with a chemotherapy-induced stomatitis. Your attending physician suggests that you place her on a constant infusion of intravenous morphine. Without adjusting for partial cross-tolerance, what hourly rate of intravenous morphine will you choose to continue to keep her pain well controlled?

Answer: 4 mg/hr

Calculating the Answer

Methadone 40 mg po = 20 mg IV = morphine 20 mg IV

Codeine 60 mg po = 40 mg IV = morphine 3 mg IV

Total daily dose:

Methadone 40 mg po X 4 = morphine 80 mg IV

Codeine 60 mg po X 6 = 18 mg IV

Total morphine/24 hours = 98 mg

98 mg , 24 hrs = **4 mg/hr**

Case 7: John is a 40-year-old accountant with AIDS (acquired immunodeficiency syndrome). His most recent T4 count is 34. He has noted a burning pain in his hands and feet for the past 2 years. It initially appeared after he began zalcitabine (ddC) in addition to zidovudine (AZT) and resolved when the ddC was discontinued. However, over the past 6 months the pain has returned. It is severe, keeps him awake at night, and is associated with numbness of his feet. He has trouble buttoning his shirt. How would you manage John's pain?

Answer: Consider opioids, tricyclic antidepressants, gabapentin, and other adjuvants for neuropathic pain

Case 8: Sarah is a 73-year-old attorney who has breast cancer with metastases to bone. She was treated with three cycles of AC (Adriamycin, cyclophosphamide) without response. Pain persists, even after 2 months of tamoxifen. How would you manage Sarah's pain?

Answer: Consider NSAIDs, steroids, and bisphosphonates as well as radiation

Case 9: David is a 67-year-old farmer with colon cancer metastatic to liver. He has complained of increasing right upper quadrant pain. Examination reveals a tender liver, but no shifting dullness to percussion of his abdomen. How would you manage David's pain?

Answer: Consider opioid analgesics and steroids to decrease capsular stretch

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