Key Points

1. Conversion of morphine oral to IV/SQ is 3:1.
   For example, morphine 30mg PO is equal to morphine 10mg IV/SQ.

2. Maximum daily dose of acetaminophen is 4 grams in 24 hours.

   Tylenol #3™ (Codeine 30mg/APAP 325 mg)
   Max in 24 hours equal to 12 tablets

   Percocet™ (Oxycodone 5mg/APAP 325mg)
   Max in 24 hours equal to 12 tablets

   Tylox™ (Oxycodone 5mg/APAP 500mg)
   Max in 24 hours equal to 8 tablets

   Lortab5™ (Hydrocodone 5mg/APAP 500mg)
   Max in 24 hours equal to 8 tablets

3. MSContin or Oromorph should not be prescribed as a PRN medicine or at a frequency of less than 8 hours.
   The half-life of sustained release morphine is 8–12 hours and is not effective for breakthrough pain. It will take five half-lives or about two days to reach a steady state.

4. Fentanyl patch 25mcg/hr, topically exchanged every 3 days, is approximately equivalent to morphine 45mg oral in divided doses over 24 hours.
   The smallest dose of fentanyl is equivalent to 8–10 Percocet or Tylox tablets in a 24-hour period. Opioid-naive patients should not receive fentanyl.

5. Opioid prescriptions self-destruct.
   An opioid prescription expires in three days. Only prescriptions for codeine and hydocodone can be refilled without a new written prescription.

Pain and Pain Control (I and II)

The Palliative Response

Discussion: Ms. Brewster

Ms. Brewster is taking (2) Percocet every 4 hours for bone pain related to osteoporotic spine fracture and collapse

Equianalgesic Dose
Morphine-MS Contin

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

A) MS Contin

Equianalgesic Dose
Morphine-Oral MS

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

B) Oral MS immediate release

Equianalgesic Dose
Morphine-Fentanyl Patch

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

C) Fentanyl patch (Duragesic)

Equianalgesic Dose
Morphine-Oral Hydromorphone

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

D) Oral hydromorphone (Dilaudid)

Equianalgesic Dose
Morphine-Oxycontin

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

E) Oxycontin

Equianalgesic Dose
Morphine Patient-Controlled Analgesia (PCA) Pump

- Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours
- Calculate the equianalgesic dose for:

F) PCA Morphine pump SQ or IV

The Palliative Response

OPIOID EQUIANALGESIC CONVERSION TABLE

(Dosing in mg unless listed)

ORAL	OPIOID AGENT	IV/IM/SQ
30	Morphine (MSC, OSR, Roxanol™)	10
8	Hydromorphone (Dilaudid™)	2
20	Methadone (Dolophine™)	—
300	Meperidine (Demerol™)	100
30	Oxycodone (Roxicodone™, OxyContin™)	—
4 tabs	Oxycodone 5mg/APAP 325mg (Percocet™)	—
6 tabs	Hydrocodone 5mg/APAP 500mg (Lortab5™)	—
6 tabs	Codeine 30mg/APAP (Tylenol #3™)	—
200+	Codeine	—

FENTANYL PATCH CONVERSION
25mcg/hour topically exchanged every 72 hours is equivalent to the following:

- Morphine 15mg IV or 45mg PO per day
- Hydromorphone 3mg IV or 12mg PO per day
- Percocet™/ Lortab5™ /Tylenol #3™—9 tabs per day

Oxycodone and Acetaminophen

Ms. Brewster is taking (2) Percocet every 4 hours for bone pain related to osteoporotic spine fracture and collapse

- Percocet is oxycodone 5mg/ APAP 325mg
- This is equal to 4 grams of acetaminophen in a 24-hour period
- The maximum daily acetaminophen dose should not exceed 4 grams in 24-hour period

Oxycodone and Morphine

Ms. Brewster is taking (2) Percocet every 4 hours for bone pain related to osteoporotic spine fracture and collapse

- Oxycodone and Morphine are equianalgesic
- 4 Percocet contain 20mg of Oxycodone with APAP and are approximately equivalent to morphine 30mg
- 12 Percocet approximately equal morphine 90mg in divided doses over a 24-hour period

Equianalgesic Dose
Morphine-MS Contin

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

A) MS Contin

- Comes as MS Contin 15,30,60,100,200mg tablet
- Can be dosed as q8 or q12 hour (not BID or TID)
- Takes 5 half-lives/about 48 hours to reach steady state

Equianalgesic Dose
Morphine-MS Contin

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

A) MS Contin 30mg q8

- Probably best choice
- Make sure that breakthrough dose of 10–15% is available, particularly until reaches steady state

Equianalgesic Dose
Morphine-Oral MS

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

B) Oral MS immediate release

- MS elixir 10mg/5ml q2–4
- MS concentrate 20mg/1ml q2
- MSIR 15mg tablets q4

Equianalgesic Dose
Morphine-Oral MS

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

B) Oral MS immediate release

- MS elixir 10mg/5ml, 7.5ml, or 15mg q4
- MS concentrate 20mg/1ml *Offer* 0.5ml or 10mg q2 *May Refuse*
- MSIR 15mg tablets q4

Fentanyl Patch
(Duragesic)

- Reaches steady state in about 18 hours
- Dose can be escalated every 24 hours
- The medicine is deposited in fat under skin
- Duragesic is expensive
- Some patients have trouble with the patch staying applied
- Must be on central or core body area to be well absorbed

Equianalgesic Dose
Morphine-Fentanyl Patch

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

C) Fentanyl patch (Duragesic)
50mcg/top q72 hour

- MS 45mg by mouth, MS 15mg IV in a 24-hour period is equianalgesic to fentanyl 25mcg/hr topically exchanged every 72 hours

Oral Hydromorphone
(Dilaudid)

- Dilaudid 1, 2, 4, or 8mg tablets
- Usually a q4 hour drug
- No sustained release form
- Expensive
- Popular on the street
- Excellent opioid—sometimes fewer side effects than morphine, methadone, or other opioids

Morphine and Oral Hydromorphone

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

D) Oral hydromorphone (Diluadid)
4mg q4 hour by mouth

- Hydromorphone 8mg equianalgesic to MS 30mg/24 hours
- Hydormrophone 24mg equianagesic to MS 90mg/24 hours

Equianalgesic Dose
Morphine-Oxycontin

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

E) Oxycontin

- Oxycodone and Morphine equianalgesic
- Oxycontin comes as 10, 20, 40mg
- Must be dose q12 hour; do not dose q8 because of longer half-life than Ms Contin
- May increase dose every 48–72 hours

Equianalgesic Dose
Morphine-Oxycontin

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

E) Oxycontin 40mg po q12 hour with Oxycodone IR 5mg (2)q4 or breakthrough

Equianalgesic Dose

Morphine-IV Morphine

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

F) IV Morphine

- IV to PO Morphine Conversion is 3:1
- Morphine 90mg PO/24 hours is equal to Morphine 30mg IV/24 hours

Morphine and PCA Morphine Pump

Ms. Brewster is taking the equivalent of Morphine 90mg in 24 hours

Calculate the equianalgesic dose for:

F) PCA Morphine pump SQ or IV

- MS 1mg/1ml Infuse Continuous at 1mg/hour
- PCA (Patient Control Analgesia) Bolus 1mg q30 minutes

  SQ and IV are equally potent

  SQ does not require maintaining IV site and access

Key Points

1. Consider opioid dose escalation if current dose does not control pain.

   For mild to moderate pain, a 25–50% dose escalation is appropriate. For moderate to severe pain, a 50–100% dose escalation is appropriate.

2. Demerol is not recommended for the treatment of pain, due to its toxic metabolites and poor oral absorption.

3. If you expect pain in a patient, consider an Offer/May Refuse order rather than a PRN order for pain medication.

   Delivery of a PRN medication can take over an hour; by then the pain can be quite severe. When the staff offers pain medication at regular intervals, the patient can better control the pain.

4. Sedation, nausea, vomiting, and most opioid side effects are self-limiting and resolve within a few days.

   The physician can anticipate, explain, or treat the side effects to enhance compliance and effective pain control.

5. Anticipate and treat constipation when prescribing opioids, as constipation is not self-limiting.

   Employ a stimulant such as biscodyl or senna to prevent constipation caused by opioids.

6. Pain comes in many forms.

   Somatic pain from tissue injury is the most common type of pain treated with opioids at Life's End. Other kinds of pain (crampy visceral pain, burning and stabbing neuropathic pain) may have some response to opioids, but they benefit more from co-analgesics and adjunctive medicines.

Discussion:
Mr. Norbett

Mr. Norbett, a 72-year-old with metastatic prostate cancer, is admitted with 10/10 back pain that has developed over the last two weeks. He has increased his Percocet use to 2 tablets every 4 hours with minimal effect. He is having difficulty walking because of the pain. The medicine resident is called to the ED to admit him for symptom management and evaluation.

Symptom Management/ Evaluation

The resident writes the following orders:

- MSIR tablets 5mg 2 or 3 tablets po every 4–6 hours prn severe pain
- Tylox 1 or 2 PO every 6 hours mild pain
- MRI of the spine to rule out cord compression

Symptom Management

- The technician sends the patient back to the floor because he is unable to tolerate the MRI and in his agitation has pulled out his IV
- He has received several one-time orders for Demerol 75mgIM

Morphine Dosage

- Calculate the equianalgesic dose of morphine/24hr for the 2 Percocet q4/24hr
- Calculate the minimal and maximal dose of morphine for 24 hours for Mr. Norbett's orders

Morphine Dosage

- Calculate the equianalgesic dose of Morphine/24 hours for the 2 Percocet q4/24 hours

  12 Percocet are approximately equivalent to morphine 90mg PO
- Calculate the minimal and maximal dose of morphine for 24 hours for Mr. Norbett's orders

  Minimal is morphine 40mg/24 hours

  Maximal is morphine 90mg/24 hours

Nursing Response to Opioid Orders

Nursing staff, afraid they will overdose patients and cause them to die, often:

- Pick the weaker of two opioids ordered
- Pick the lower dose
- Pick the longest interval
- Are reluctant to give morphine if Tylox given in the last few hours, even if ineffective

Pain Control

- When pain is poorly controlled
  Use the original daily dose to calculate a new higher dose
- For mild to moderate pain
  Escalate dose by 25–50%
- For moderate to severe pain
  Escalate dose by 50–100%

Safe Escalation of Dosage

- Percocet dose was equivalent to Morphine 90mg PO/24 hours
- Dose escalation of 100% for uncontrolled pain: Morphine 180mg/24 hours
- How to do this safely?

Safe Escalation of Dosage

- MS Elixir (10mg/5ml) 7.5ml or 15mg q2 hours
  Offer/Patient May Refuse
- Morphine PO to IV is a 3:1 ratio
- Morphine 5mg SQ q2 hours
  Offer/Patient May Refuse

Offer/May Refuse **Orders** Advantages

- Not PRN
- Patient does not have to wait for nursing staff to check and bring PRN medication, which can take up to an hour
- Patient will not get scheduled dose if sleeping or free of pain

Offer/May Refuse **Orders** Implementation

- Use small but frequent doses in dose-finding
- Can switch to long-acting dose based on response
- Can expect response within 4–8 hours

Other Considerations

- Anti-inflammatory medicines are often helpful for bony pain when combined with opioids
- Could use NSAID (e.g., Ibuprofen)
- Could use SAID steroidal anti-inflammatory drugs (e.g., Decadron), which might help with possible cord compression
- Use a large-bowel stimulant (e.g., senna or bisacodyl)

Selected Readings

Patient's Experience of Pain

Weiss, S. C., L. L. Emanuel, D. L. Fairclough, and E. J. Emanuel. "Understanding the Experience of Pain in Terminally Ill Patients." *The Lancet* 357 (2001): 1311–1315.

Classification of Cancer Pain

Caraceni, A. and Weinstein, S. M. "Classification of Cancer Pain Syndromes." *Oncology* 15 (2001): 1627–1639.

Management of Pain in Palliative Care

Cherny, N. I. "Update in the Management of Cancer Pain." In *Principles and Practice of Supportive Oncology* edited by A. M. Berger, R. K. Portenoy, and D. E. Weissman. New York: Lipincott Williams & Wilkins Healthcare 1 (1999): 1–16.

Jadad, A. R. and G. P. Browman. "The WHO Analgesic Ladder for Cancer Pain Management: Stepping up the Quality of Its Evaluation." *Journal of the American Medical Association* 274 (1995): 1870–1873.

O'Neill, B. and M. Fallon. "ABC of Palliative Care: Principles of Palliative Care and Pain Control." *British Medical Journal* 315 (1997): 801–804.

Redefining Addiction in Palliative Settings

Bruera, E. and C. Sweeney. "Methadone Use in Cancer Patients with Pain: A Review." *Journal of Palliative Medicine* 5 (2002): 127–138.

Passik, S. D., K. L. Kirsh, and R. K. Portenoy. "Understanding Aberrant Drug-Taking Behavior: Addiction Redefined for Palliative Care and Pain Management Settings." In *Principles and Practice of Supportive Oncology* edited by A. M. Berger, R. K. Portenoy, and D. E. Weissman. New York: Lipincott Williams & Wilkins Healthcare 2 (1999): 1–12.

Pain Management in the Elderly

M. D. Anderson Cancer Center Pain Research Group. " Undertreatment of Cancer Pain in Elderly Patients." *Journal of the American Medical Association* 279 (1998): 1914–1915.

Weissman, E. D., J. Griffie, S. Muchka, and S. Matson. "Improving Pain Management in Long-term Care Facilities." *Journal of Palliative Care* 4 (2001): 567–573.

Palliation of Non-End-of-Life Pain Syndromes

Baumrucker, S. J. "Post-Thoracotomy Pain Syndrome: An Opportunity for Palliative Care." *American Journal of Hospice and Palliative Care* 19 (2002): 83–86.