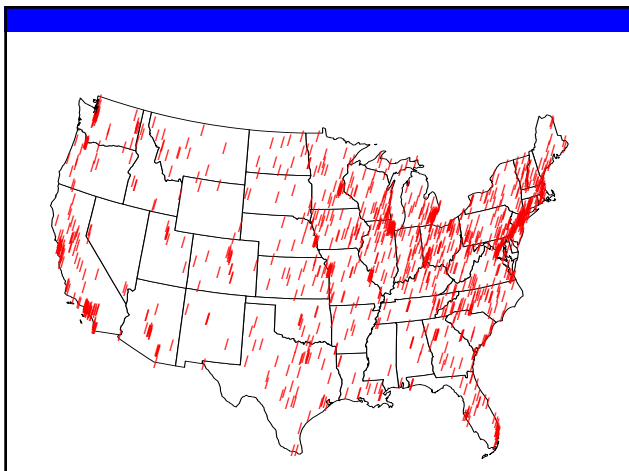


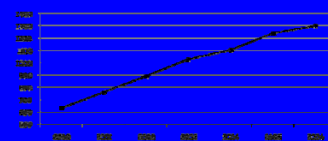
Definition of Palliative Care

- Interdisciplinary specialty that aims to relieve suffering and improve quality of life for patients with advanced illness, and their families.
- It is provided simultaneously with all other appropriate medical treatment.

U.S. Hospital Based Palliative Care Programs: AHA Survey 2001



Growth of palliative care



- 30% of U.S. hospitals report a HPC program
- 70% U.S. hospitals with >75 beds report a HPC program
- Almost 100% penetration of palliative care into VA hospitals
- Lowest growth rate and prevalence of HPC is in southern states and in for-profit hospital systems
- Factors significantly associated with HPC include size (+), teaching hospital (+), hospice affiliation (+), for profit status (-).

Prognostication

SGIM 2008

Bob Arnold, MD

Modified from E Weinstein, MD

Learning Goals

- Describe the disease trajectory of advanced malignant disease.
- Describe the disease trajectory of advanced non-malignant disease.
- Name two prognostic markers in advanced malignancy, and one in a non-malignant disease.

Session Outline

- Why prognostication is important
- Didactics on prognosis
 - Malignant diseases
 - Non-malignant diseases
- Cases

Prognostication

- Important for patient planning
- Important for clinical decision making
- Two steps
 - Foreseeing
 - Foretelling

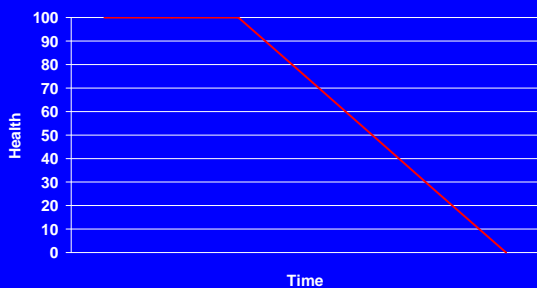
Foreseeing

- Doctors are not very good at this
 - Overestimate prognosis by 3-4x
 - Worse if the doctor knows the patient
 - Academic oncologist better

Malignant diseases A case

- 60yo WM with colon cancer metastatic to the liver who is admitted with nausea and vomiting. He is found to have acute kidney injury secondary to decreased po intake. While in the hospital he does not take much po and he becomes delirious.

Malignant Diseases: Natural History



Malignant diseases- What are the indicators?

- Performance status
- Oral intake
- Edema
- Dyspnea
- Delirium
- WBC count
- %lymph
- Clinician's estimation

Malignant diseases- Specific syndromes

- Malignant hypercalcemia
- Malignant pericardial effusion
- Carcinomatous meningitis
- Multiple brain metastases
- Malignant ascites, malignant pleural effusion, or malignant bowel obstruction

Malignant Diseases: What are the indicators?

- Performance status
- Oral intake
- Edema
- Dyspnea
- Delirium
- WBC count
- %lymph
- Clinician's estimation

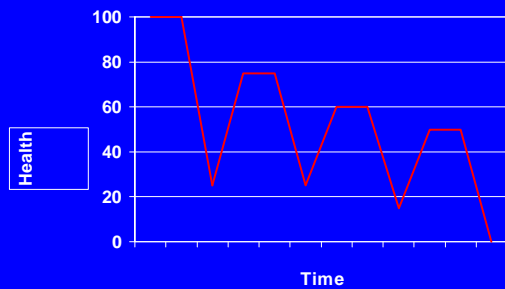
Malignant Diseases- Prognostic scales

- Palliative Prognostic Index (PPI)
- Palliative Prognostic (PaP) Score
- Palliative Performance Scale (PPS)

Malignant Diseases: The Case

- What's his prognosis?
- Using the PPI
 - Karnofsky= 20
 - PO intake
 - Delirium
- PPI total= 10.5
 - Median survival 12 days

Non-Malignant Diseases: Natural History



Choose a non-malignant disease

- Congestive heart failure
- Dementia
- ESLD
- Dialysis dependent CKD

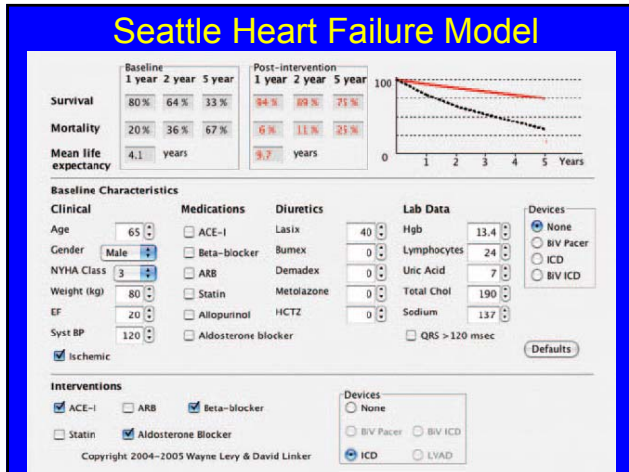
Heart Failure: A Case

- 60yo WM with PMH significant for CAD and ISCM, EF 15% who is admitted with increased SOB and LE edema. Pt reports SOB with minimal exertion. On exam pt's SBP is 90 and he appears volume overloaded. Labs are significant for Na 126, Cr 1.4, Hgb 10.

Heart Failure: What are the indicators?

- Recent cardiac hospitalization (triples 1-year mortality)
- Cachexia
- Reduced functional capacity

Seattle Heart Failure Model



Heart Failure: The Case

- www.seattleheartfailuremodel.org

End-Stage Liver Disease: A Case

- 60yo WM with ESLD secondary to ETOH, complicated by ascites, encephalopathy and thrombocytopenia who was admitted with hematemesis. Pt was found to have bleeding from esophageal varices. During the hospitalization pt had Cr 1.7, Bili 3, Albumin 1.8 and INR 1.5

End-Stage Liver Disease- What are the indicators?

- Compensated or decompensated cirrhosis
- Child's class- best indicator
- Hepatorenal syndrome
- GI Bleed
- MELD- objective, used for transplant listing

End-Stage Liver Disease: The Indicators

- Compensated cirrhosis
 - <10% 1-yr mortality
- Decompensated cirrhosis
 - <40% 1-yr mortality
- Child's class
 - 55% 1yr mortality- Childs C
- HRS
 - >90% in-hospital mortality
- GI Bleed
 - 57% 1-yr mortality
 - most deaths within 6 weeks of bleed

End-Stage Liver Disease: The Case

- Decompensated cirrhosis ~40% 1 yr mort
- GI bleed ~57% 1 yr mortality
- Child's class C ~55% 1 yr mortality

Dementia: A Case

- Pt is an 84yo WM with Alzheimer's dementia who is admitted from a SNF with MS changes and found to have a UTI. At baseline pt is dependent for all ADLs. Exam is remarkable only for fever, tachycardia and dry mucous membranes.

Dementia: What are the indicators?

- ADLs
- Functional capacity
- Comorbidities

Dementia: Prognostic Scales

- Functional Assessment Staging (FAST)
 - Studied in small number of pts
- Mortality Risk Index Score (MRI)
 - Studied in newly admitted to SNF

Dementia: The Case

- Using the MRI
 - 84yo- 1.4
 - Male- 1.9
 - Dependent for ADLs- 1.9
- MRI- 5.2= 23% 6 month mortality

Miscellaneous Markers

- Stopping Dialysis = 7-14 days
- Not eating/no TF = weeks - months
- Not drinking/no IVFs = weeks

Cases

- Your cases???

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- Mortia T, et al. The Palliative Prognostic Index: a scoring system for survival prediction of terminally ill cancer patients. *Support Care Cancer* 1999; 7:128-133.
- M. Pirovano, M. Maltoni, O. Nanni et al., A new palliative prognostic score: a first step in the staging of terminally ill cancer patients. *J Pain Symptom Manage* 1999; 17: 231-239.
- Levy WC et al., The Seattle Heart Failure Model: Prediction of Survival in Heart Failure. *Circulation* 2006;113:1424-1433.
- D'Amico et al., Natural history and prognostic indicators of survival in cirrhosis: A systematic review of 188 studies. *J of Hepatology* 2006; 44:217-231.
- Tsai S and Arnold R. Fast Facts and Concepts # 150: Prognostication in Dementia. http://www.eperc.mcw.edu/fastFact/ff_150.htm

A Mechanism-Based Approach to Nausea and Vomiting

Gordon J. Wood, MD
University of Pittsburgh
Section of Palliative Care and Medical Ethics
Institute to Enhance Palliative Care

Objectives

- Describe the 3 steps in a mechanism-based approach to nausea and vomiting
- Describe the 4 pathways by which nausea and vomiting are triggered
- Describe an approach to management of intractable/refractory nausea and vomiting

Mechanism-Based Therapy

1. Careful assessment to determine etiology
2. Use knowledge of pathophysiology to determine receptors underlying symptoms
3. Choose antiemetic to block implicated receptors

Mechanism-Based Therapy

- 40 patient episodes of N/V in inpatient palliative care unit
- Most common causes: gastric stasis/outlet obstruction (35%), chemical/metabolic (30%)
- Nausea resolved in 28 of 34 cases (82%)
- Vomiting resolved in 26 of 31 cases (84%)
- Total symptom control in mean of 3.4 days

Bentley A et al. Palliat Med. 2001;15(3):247-253

Empiric Treatment

- Mechanism-based therapy effective^{1,2}
- Some advocate empiric D2 antagonists³ in all cases
- No head-to-head comparison
- D2 antagonists are our first choice in acutely symptomatic patients undergoing workup

1. Stephenson J et al. Support Care Cancer. 2006;14(4):348-353.
2. Lichter I et al. J Palliat Care. 1993;9(2):19-21.
3. Bruera E et al. J Pain Symptom Manage. 1996;11(3):147-153.

Benefits of mechanism-based therapy

- Potentially more effective in certain scenarios
- Facilitates systematic approach that identifies all possible contributors
- Guides treatment of underlying causes
- Informs choices of second and third antiemetics
- Minimizes risks of side-effects

Mechanism-Based Therapy

1. Careful assessment to determine etiology
2. Use knowledge of pathophysiology to determine receptors underlying symptoms
3. Choose antiemetic to block implicated receptors

Evaluation

- History
- Physical examination
- Laboratory testing
- Radiology

Evaluation

- Confident in cause of N/V in 45 of 61 hospice patients
- Chemical abnormalities 33% (metabolic, drugs, infection)
- Impaired gastric emptying 44%
- Visceral and serosal causes 31% (bowel obstruction, GI bleed, enteritis, constipation)

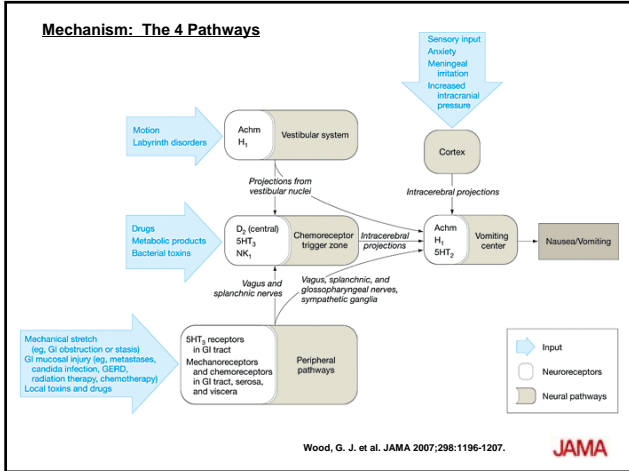
Stephenson J et al. Support Care Cancer. 2006;14(4):348-353.

Mechanism-Based Therapy

1. Careful assessment to determine etiology
2. Use knowledge of pathophysiology to determine receptors underlying symptoms
3. Choose antiemetic to block implicated receptors

Mechanism: The 4 Pathways

1. Chemoreceptor Trigger Zone
2. Cortex
3. Peripheral Pathways
4. Vestibular System



- ## Mechanism-Based Therapy
- Careful assessment to determine etiology
 - Use knowledge of pathophysiology to determine receptors underlying symptoms
 - Choose antiemetic to block implicated receptors

Antiemetics

Antiemetic	Receptor Antagonized
Metoclopramide (Reglan)	D2 (GI tract) 5HT3 (at high doses)
Haloperidol (Haldol)	D2 (CTZ)
Prochlorperazine (Compazine)	D2 (CTZ)
Chlorpromazine (Thorazine)	D2 (CTZ)
Promethazine (Phenergan)	H1, Achm, D2 (CTZ)

Wood, G. J. et al. JAMA 2007;298:1196-1207.

Antiemetics: Continued

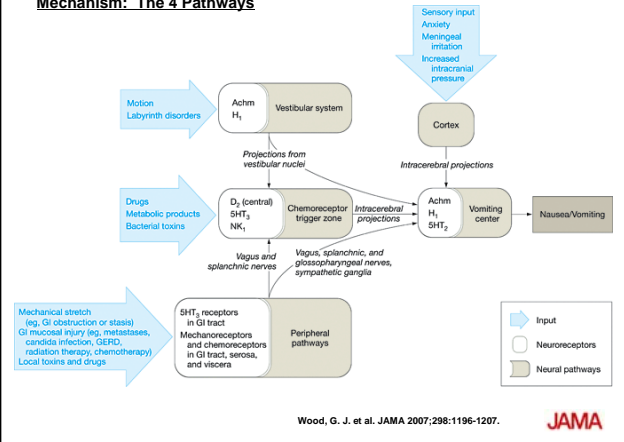
Antiemetic	Receptor Antagonized
Diphenhydramine (Benadryl)	H1
Scopolamine (Transderm Scop)	Achm
Hyoscyamine (Levsin)	Achm
Ondansetron (Zofran)	5HT3
Mirtazapine (Remeron)	5HT3

Wood, G. J. et al. JAMA 2007;298:1196-1207.

Case

- 42 yo F with breast cancer complains of severe nausea whenever she turns her head. The nausea is associated with vertigo.

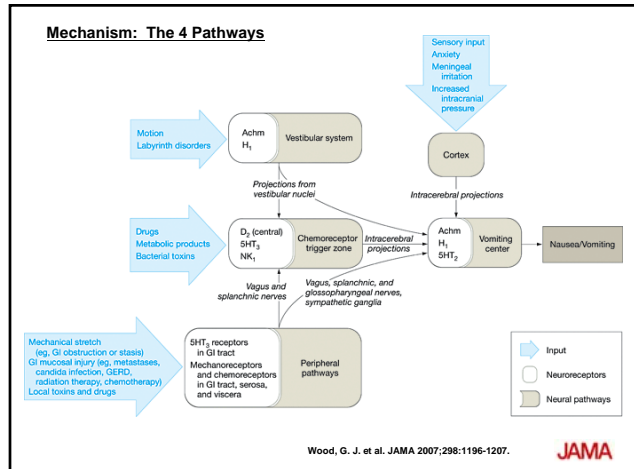
Mechanism: The 4 Pathways



Case

- 58 yo M with pancreatic cancer undergoes upper abdominal radiation and develops severe nausea and vomiting.

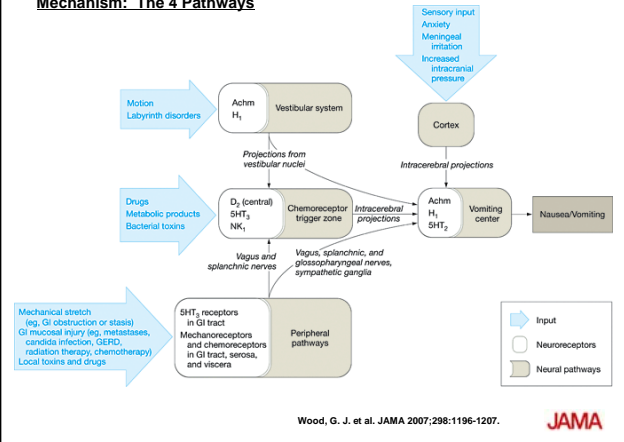
Mechanism: The 4 Pathways



Case

- 45 yo M with ESRD is admitted with calciphylaxis and has painful lesions on his lower abdomen and upper legs. You begin therapy with PRN IV hydromorphone and it helps his pain but he gets severe nausea with each dose.

Mechanism: The 4 Pathways



Opioid-Induced N/V

- D2 antagonists first-line
- Generally resolves within 3-5 days of continued use
- 10-20% dose reduction may alleviate nausea without loss of analgesia¹
- Opioid rotation also effective²

1. Fallon MT et al. BMJ. 1998;317(7150):81.
2. De Soutz ND et al. J Pain Symptom Manage. 1995;10(5):378-384.

Refractory/Intractable N/V

- Schedule around-the-clock
- Add second agent to block other implicated receptors
- Prophylactic dosing
- Treat underlying cause if possible
- Less traditional agents

5HT3 Antagonists

- Effective for:
 - Chemotherapy-induced N/V¹
 - Radiation therapy-induced N/V²
 - Post-operative N/V³
 - Smaller studies suggest efficacy for nausea due to opioids⁴ or uremia⁵
- Otherwise, no more effective than cheaper D2 antagonists for most common causes of N/V⁶

1. Kris MG et al. J Clin Oncol. 2006;24(18):2932-2947.
2. Roberts JT et al. Oncology. 1993;50(3):173-179.
3. Gan TJ et al. Anesth Analg. 2003;97(1):62-71.
4. Sussman G et al. Clin Ther. 1999;21(7):1216-1227.
5. Ljubic D et al. Kidney Blood Press Res. 2002;25(1):61-64.
6. Weschules DJ et al. Am J Hosp Palliat Care. 2006;23(2):135-149.

Conclusions

1. Mechanism-based approach
 - Careful assessment to determine etiology
 - Use knowledge of pathophysiology to determine receptors underlying symptoms
 - Choose antiemetic to block implicated receptors
 - Also treat underlying etiology
2. Refractory/Intractable N/V
 - Multiple agents, around-the-clock and prophylactically
 - Less traditional agents

Questions?
Cases?



Pain Management in
hospitalized patients

Erik K. Fromme, MD
Oregon Health & Science University

Topics to cover & key points

1. Opioid dosing
 - The optimal initial dose of IV morphine for a patient with severe pain is Xmg
2. Opioid rotation
 - Rotating opioids often gives 25-33% better pain control
3. Equianalgesic conversions
 - Be disciplined about doing these



Why the focus on opioids?

- Indicated for moderate-severe pain
- Troublesome
- Room for improvement

WHO Analgesic Ladder	
Freedom from cancer pain	
Moderate-Severe Strong opioid +/- Nonopioid +/- Adjuvant	Step 3
Mild-Moderate Combo opioid +/- Nonopioid +/- Adjuvant	Step 2
Mild Nonopioid +/- Adjuvant	Step 1
Pain	

“You’ve gotta be kidding! Your back *still* hurts?”



Opioids are often not enough

1. Is this bony or inflammatory pain that would respond well to an NSAID or steroid?
2. Is this neuropathic pain that would respond to an anti-convulsant or anti-depressant
3. What about other modalities e.g. a nerve block, brace, heat/cold, etc



Key Point 1: What's the right starting dose?

Mr. Stone is a 54 YO man with 10/10 pain in his right flank radiating to his groin, which is much worse with any movement.

Recommend a starting dose of IV morphine:

- a. 1-2mg
- b. 3-4mg
- c. 5-6mg
- d. 7-8mg
- e. \geq 9mg



Key Point 1: What's the right starting dose?

- 119 ER patients w. acute severe pain (7-10)
 - Excluded chronic pain, addiction, Δ mental status
- Single IV morphine bolus at 0.1mg per kg
 - so 7mg IV for a 70 kg person
- Measured pain at baseline and 30mins later
 - Success was defined as 50% reduction in verbal pain rating
- 0.1mg/kg dose only effective in 1/3 of patients
- No major complications or narcan needed

Bijur et al. Annals Emerg Med 2005 (46):362



Key Point 1: There is no 'right' starting dose— **YOU MUST REASSESS!!!**

- The real key point here is that you need to reassess patients with severe pain within 30 minutes of whatever dose you give them
 - IV opioids will achieve peak effect within 5-15 minutes
 - PO opioids will achieve peak effect within 30-60 minutes



3 Reassessment questions for rounds

1. On average in the past 24 hours, how would you now rate your pain on a scale of 0-10, where "0" is no pain and "10" is worst pain imaginable?
2. Which pain medications have you taken during the past hours/days since the last interview?
3. What side effects are you experiencing from the medication? If yes, are they generally mild, moderate or severe? Would you describe them generally as tolerable or intolerable?



WHO Ladder, taking the 3rd step

- Patient has poorly controlled pain despite max doses of vicodin or percocet
 1. SR morphine 30 mg Q12H + IR morphine tabs/elixir 15 mg Q2H PRN for breakthrough
 2. SR oxycodone tabs 20 mg Q 12H + IR oxycodone tabs /elixir 10 mg Q2H PRN
 3. SR hydromorphone tabs 8 mg Q 12H + IR hydromorphone tabs 4 mg Q2H PRN



Dose adjustments basics

1. Breakthrough doses should be **10%** of 24 hour long acting total **q 2 hours**
2. For inadequately controlled pain **without** side effects, increase breakthrough dose by 25-50%
3. Consider increasing long acting if pt needs > 4 breakthrough doses
4. For inadequately controlled pain **with** side effects, rotate opioids.



Key Point #2: Opioid rotation

- Based on incomplete cross tolerance
- 25-33% improved pain control at equianalgesic dose (same or less side effects) when switching to a new opioid
 - Morphine → oxycodone → hydromorphone
 - → Methadone



Key Point 2: opioid rotation

- No RCT evidence – based on 52 case reports, case series & retrospective reviews 51/52 were positive
 - (Quigley, Cochrane review 2003)



Key Point 3: Equianalgesic dose conversions

- Q: How much, in oral morphine equivalents, do you get in 24 hours on a 25 mcg fentanyl patch?
- A: 72mg (60-90)
- Key Point 3: Be disciplined about converting everything into oral morphine equivalents
 - B/C if you can't quantify an opioid dose, you are more likely to make under/over dosing errors



How to remember fentanyl patches

- A 25 mcg fentanyl patch is equal to 24 mg of IV Morphine
- Rule: 25 mcg of fentanyl (patch) is equal to a 1mg/hour morphine drip
- Note: IV fentanyl is different
 - 10mcg of IV fentanyl = 1 mg of IV morphine but only lasts 30 minutes



Know your equianalgesic conversions:

- How much oral morphine is equivalent to 5 mg IV morphine?
- 5mg IV = 15mg po
- Rule: IV morphine is 3x stronger than po morphine
- Fentanyl patch: 1mg/hour x 24 hours = 24mg IV morphine = 72mg po morphine



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Duragesic Overdose and Death

Duragesic is a brand of pain patch containing a powerful narcotic, analgesic called fentanyl that is worn directly on the skin as a chronic treatment for chronic pain. The patch system allows the medicine to be absorbed slowly through the skin at a constant rate for up to three days. The patches come in different strengths, and more than one patch may be worn at a time.

Recent News About Fentanyl Transdermal Pain Patches

Atkins Recall
April 1, 2008—Atkins South Atlantic, LLC, a subsidiary of Atkins, Inc. is proceeding with a voluntary recall of all lots of its Fentanyl transdermal system C2 patches sold in the U.S. The recall is an expansion of the company's initial recall of 14 lots of fentanyl transdermal patches announced on February 12, 2008 due to a batch-level defect which may cause the patch to leak and expose patients and caregivers directly to the fentanyl gel inside. All of



Know your equianalgesic conversions:

- How much po morphine is equivalent to 2 mg IV hydromorphone (Dilaudid)?
- 2mg IV hydromorphone = 40mg po morphine!
- Rule: IV hydromorphone is 20x stronger than po morphine



Know your equianalgesic conversions:

- Other useful conversions:
 - Hydrocodone \leq Morphine \leq Oxycodone, but they are really close
 - Morphine = methadone for about 8 hours, but methadone's half life is 18 to 60+ hours...



Using PCA pumps

- Loading doses: most aggressive
- Bolus doses:
 - Difficult to overdose
 - Goal = pain relief in ≤ 2 boluses
- Basal rates: very cautious!
 - Always start LOW, go SLOW
 - Even $\frac{1}{2}$ mg of morphine an hour still is equal to 6 percocets a day



Case 1: Write down your PCA Settings

- Ms. A is a 48 YO with abdominal pain due to metastatic ovarian cancer and peritonitis.
- Her pain was previously controlled with 8 Percocet a day
- Today, 2x 5mg morphine boluses in the ER controlled her pain (from 10 to 4, and tolerable)
- Write down what loading, bolus, and basal doses of morphine you would prescribe to start



Ms. A

- Loading dose: 0 to 10mg (depending on pain)
- Bolus dose: 2.5-5mg q 10 minutes
 - Controlled pain is easier to treat than uncontrolled pain
 - Goal is to ensure that patient doesn't need more than 2 boluses to get adequate relief
- Basal dose: 0-2mg/hour
 - Unknown what 24h requirements will be – pain could get better with disease treatment
 - Starting basal rate should be ½ bolus dose or less
 - 2 mg x 24hours = 48mg x 3 = 144mg in 24 hours



What's wrong with these orders

- Dying patient in severe pain
- **Morphine gtt 1-20mg IV titrate to comfort**
RULE: Control severe pain with boluses, then start your continuous infusion once pain is controlled. Don't titrate a drip rate to achieve comfort – it takes too long
- **Morphine 5mg IV x 1 STAT**
- **Call if pain unrelieved after bolus**
- **If pain relieved, start morphine gtt at 2.5mg/hour up to 20mg/hour titrated to comfort**



What's wrong with these orders

- **Vicodin 1-2 po q 4-6 prn pain**
RULE: SPECIFY DOSE AND INTERVAL AND, THE DURATION OF MOST ORAL OPIOIDS IS 4 HOURS
- **Oxycodone 5mg po q2 hours prn**
OR
- **Oxycontin 20mg po bid**
- **Oxycodone 10mg q2 hours prn breakthrough pain**



What's wrong with these orders

- D/C Vicodin 1 po q4-6
- **Fentanyl patch 25mcg change q72**
RULE: Give patches 24 hours to start working
RULE: DON'T START FENTANYL UNLESS AT LEAST 40MG OF MORPHINE (or 30mg oxycodone, or 8mg hydromorphone...) IN 24 HOURS IS INEFFECTIVE
- **Oxycontin 20mg po bid**
- **Oxycodone 10mg po q3 prn breakthrough pain**



What's wrong with these orders

- D/C Oxycontin 120mg po bid
 - D/C Oxycodone 15-30 po q 4 hours
 - PCA pump: basal rate 3mg/hour
 - PCA dose 1mg q 30 minutes
- RULE: AIM LOW FOR BASAL, HIGH FOR PCA
- PCA pump: Basal $120/3 \div 24 \text{ hours} = 1.6 \text{ mg}$
 - PCA dose 3 to 5 mg q 10 minutes



What's wrong with these orders

- OxyContin 120mg po bid
 - Oxycodone 5-10mg po q 4 hours prn
- RULE: BREAKTHROUGH DOSES SHOULD BE 10% OF 24 HOUR TOTAL q2
- Oxycodone 20mg po q 2 hours prn



Topics to cover & key points

1. Opioid dosing
 - There is not 'right' starting dose for severe pain, you must reassess
2. Opioid rotation
 - Rotating opioids often gives 25-33% better pain control
3. Equianalgesic conversions
 - Be disciplined about doing these

