Taking The Pain Out of Treating Pain in the Hospital

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Disclosure statement

The presenter has disclosed no relevant financial relationships.

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Doris A. Howell Palliative Medicine Service

- Doris A. Howell - Pediatric Oncologist & Palliative Medicine Physician
- Founder San Diego Hospice
- Palliative care service named in her honor at University of California San Diego
- 2 Hospitals
- ~900 inpatient palliative consults/year
- Transdisciplinary team
- http://cancer.ucsd.edu/care-centers/palliative/Pages/default.aspx

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Outline

- Goal = present a safe and simple approach to pain management in hospital
- Diabetes– a model for pain treatment
- Pain assessment
- Opioid basics
  - Pharmacokinetics of opioids
  - Side effects
  - Excretion of opioids
  - Opioid toxicity
- PCA transitions

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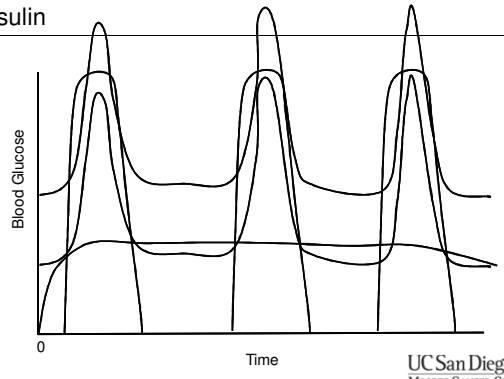
Insulin



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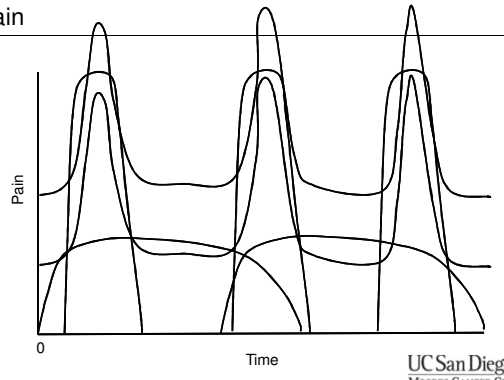
Pain



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Diabetes: A Model for Acute Pain Management

- Determine underlying etiology – what has changed?
- Determine 24 hour opioid needs at home
- *Think* about starting dose
- If pain out of control – start with *more* pain meds not less
- Do the math and show your work in your note
- Check math independently with a colleague
- Consider parenteral opioids for pain out of control
- For severe pain, consider PCA
- When in doubt, consider rapid bedside titration

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Inpatient Pain Management Challenges

- Gathering correct information
- Trusting patients – concern for aberrant drug behavior
  - Tolerance
  - Dependence
  - Pseudo-addiction
  - Addiction
  - Substance abusers
- Equianalgesic calculations
- Fear of side effects – respiratory depression
- Level of monitoring
- Changing doses
- Transitioning routes

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Step 1: Pain Assessment

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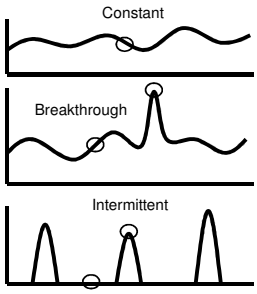
Pain Assessment

- Location
- Quality
- Radiation
- Severity
- Duration
- Temporal profile
- Modifying factors
- Associated Signs & Symptoms



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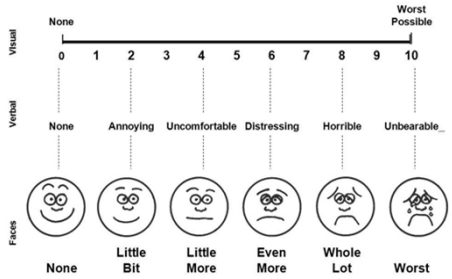
The (Dreaded) 6th Vital Sign



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"I Am Allergic to Morphine"

- True opioid allergy is rare
- Ask specifically about anaphylaxis & compromised airway
- Adverse effects are *not* allergies

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Opioid Adverse Effects

Common	Uncommon
• Constipation	• Bad dreams
• Nausea	• Hallucinations
• Dry mouth	• Pruritus
• Sedation	• Urinary retention
• Sweating	• Myoclonus
	• Respiratory depression

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Anticipate Transitory Opioid Side Effects

- Anticipate adverse effects and prophylax
- Nausea – prochlorperazine, ondansetron (constipation)
- Pruritus – cetirizine (not diphenhydramine)
- Constipation – stimulant laxatives (senna, bisacodyl)
- *Stimulants* not softners (bisacodyl, senna)

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Step 2: Remember the Opioid Basics

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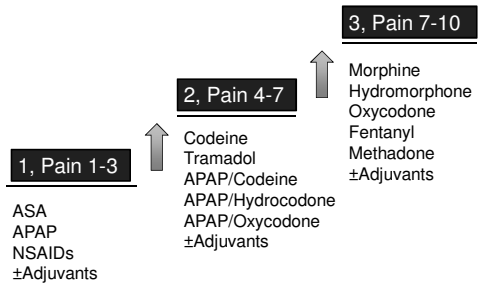
Why Opioids?



WHO. Geneva, 1996

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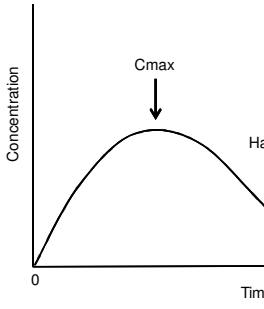
Pain 101: First Order Pharmacokinetics



Route	Time to Cmax	Half-life
PO/PR	1 hour	4 hours
IV	10 min	4 hours
(Methadone exception to rule)		

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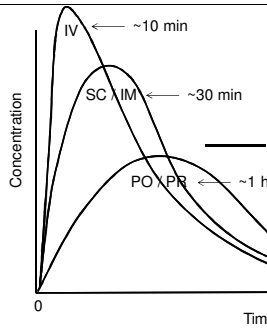
Cmax & Route of Administration



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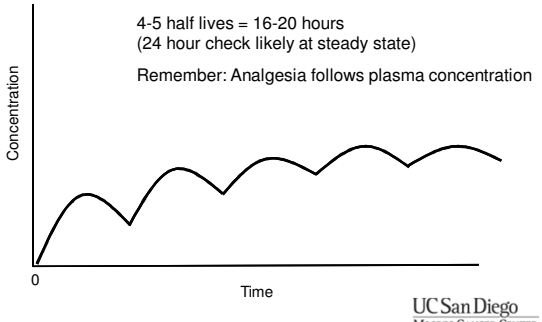
When Do Opioids Reach Steady State?



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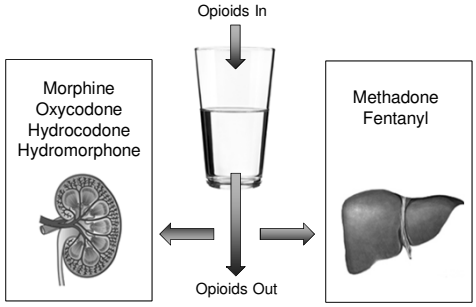
How Are Opioids Excreted?



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When Do Opioid Doses Get Us In Trouble?

- When we don't think about the dose
- When the pain stimulus is decreased (post surgery)
- Drug-drug interactions (benzodiazepines, CYP inhibitors)
- When the drug is not getting out of the body
- When we don't treat anticipated side effects

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Step 3: Determine 24 Hour Opioid Use

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General Equianalgesic Guidelines

PO / PR	IV / SC / IM
3	1

PO	APAP 325 + Codeine 30mg PO (Tylenol #3)	APAP 500 mg + hydrocodone 5mg (Vicodin)	APAP 325 + oxycodone 5mg PO (Percocet)
~Morphine Equivalent	3-4 mg	5-6 mg	7-8 mg

PO Morphine	Transdermal Fentanyl
50 mg PO in 24 hours	~25 mcg transdermal patch Q72 hours

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Equianalgesic Dosing Guidelines

PO / PR Dose (mg)	Analgesic	IV / SC / IM Dose (mg)
150 mg	Meperidine	50 mg
150 mg	Tramadol	-
150 mg	Codeine	50 mg
15 mg	Hydrocodone	-
15 mg	**Morphine**	**5 mg**
10 mg	Oxycodone	-
3 mg	Hydromorphone	1 mg
-	Fentanyl	0.05 mg (1000 mcg = 1 mg)

Pirrello, Ferris, Institute for Palliative Medicine 2008

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Calculations – Show Your Work!

- To convert from one analgesic/route of administration to another analgesic/route of administration

$$\frac{\text{X mg analgesic 1/route 1}}{\text{Y mg analgesic 2 / route 2}} = \frac{\text{Table Analgesic 1/route 1}}{\text{Table value analgesic 1/route 1}}$$

- 24 Hours: HM 48 mg IV ⟹ morphine PO mg

$$\frac{\text{X mg morphine PO}}{\text{48 mg HM IV}} = \frac{\text{15 mg PO morphine}}{\text{1 mg HM IV}}$$

X = **720 mg** in 24 hours

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Step 3: Determine Starting Dose

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Adjusting For Incomplete Cross Tolerance

- The "art" of pain management
- Take 24 hour dose and adjust based on current pain control

Pain Control	% of Calculated Dose
Poor	100%
Moderate	75%
Excellent	50%

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Starting a PCA

Hourly (Basal) Dose

Hourly Dose =	24 Hour Opioid Total (mg)
	24 Hours

Prn Dose

Option 1	10% of 24 Hour Opioid Total (mg)
or Option 2	Double hourly dose

Interval

IV Cmax	10 min
SQ Cmax	30 min

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PCA Pearls

- When in doubt, start with prn dose alone
- Rapid bedside titration, check in on patient at every Cmax and consider adjustment
- Educate patient and loved ones regarding self administration
- Sedation proceeds overdose
- Remember aggressive prn doses are safer than aggressive basal doses

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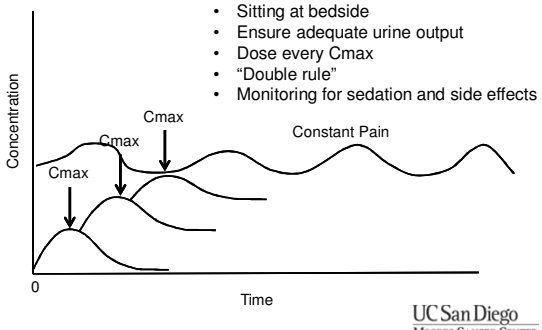
Rapid Dose Titration

- Sitting at bedside
- Ensure adequate urine output
- Dose every Cmax
- "Double rule"
- Monitoring for sedation and side effects



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Step 4: Check Your Math & Document

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The Independent Check

- Does the number make sense?
- Now independent check
  - Hang up the phone
  - Do not talk it out
  - Separate calculations with pharmacist or colleague
- Make sure document calculations in chart
- Automatic calculators lead to 'automatic thinking' and more errors

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Step 5: Check Back In On Your Patient

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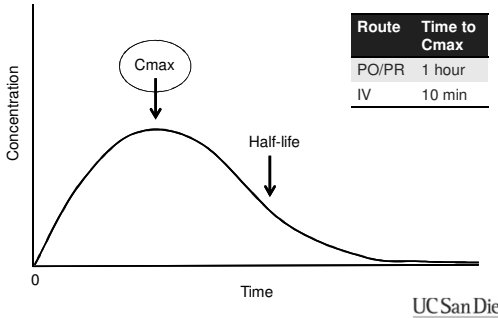
When Should We Check In On Our Patients?



Route	Time to Cmax
PO/PR	1 hour
IV	10 min

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Step 7: Titrating off the PCA

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"You Can't Go Home with a PCA"

- Think ahead - ideally consider transition as a 3 day process
- Steady state at 24 hours for new drugs
- Extra day in the hospital, is better than readmission for you and your patient

	Basal / Long Acting	Prn / Short Acting
Day 1	Transition PCA basal to long acting oral opioid (check insurance)	Maintain PCA IV prn
Day 2	Determine 24 hour prn IV needs. If high or low, adjust long-acting PO opiates	Switch IV prn to PO prn (check insurance)
Day 3	Determine 24 hour PO prn needs. If high or low, adjust long acting opiates	Determine if PO prn effective and adjust accordingly

Summary

- Think of pain management in a similar way to dosing insulin
- Keep an open mind
- Anticipate adverse effects and prophlax if possible
- Think about dosing, calculate it, and check your work
- When in doubt, start low and check patient at Cmax
- Problems develop if pain stimulus decreases or drug cannot be excreted
- Transition of PCA in stepwise fashion if possible

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Thank You

Questions/Comments
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