UPMC PALLIATIVE AND SUPPORTIVE INSTITUTE

THE TABLET: PALLIATIVE CARE PHARMACY TIPS

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If you have a topic you would like the pharmacy team to answer, please send your suggestions to: lowrymf@upmc.edu

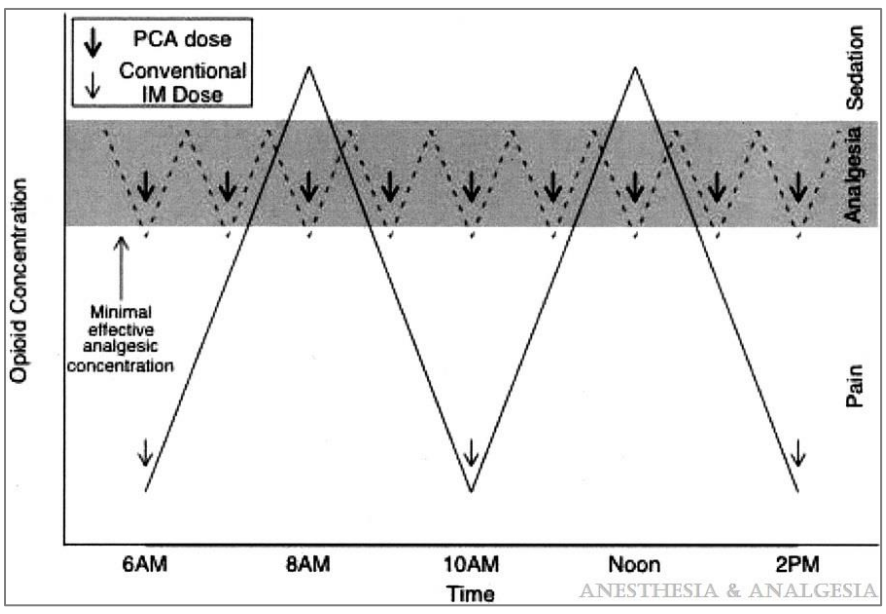
TODAY'S TOPIC:

<u>*Requested Topic*</u>: Intravenous Patient Controlled Analgesia (PCA)

Background:

Intravenous (IV) patient-controlled analgesia (PCA)'s goal is to optimize delivery of IV analgesics and allow for patient autonomy with pain management. Dose administration can be intermittent and/or continuous. "PCA" refers to the route of opioid delivery. You may hear non-analgesic orders be referred to as "PCA order." For instance, other controlled substances delivered through continuous infusion, like benzodiazepines, are required to be in a locked box on patient units and sometimes referred to as PCA (although, of course, are not providing analgesia). When patients are unable to request demand doses of analgesic due to sedation, these IV orders are sometimes referred to as a PCA, although the doses are not being delivered in that manner and would be best referred to as continuous infusion if demand doses are not being utilized.

The smallest concentration at which pain is relieved is termed "minimum effective analgesic concentration (MEAC)." To achieve pain control, the opioid must maintain consistent plasma concentrations and avoid peaks and troughs. This can be achieved through PCA and has been found to be superior to bolus IVP/IM injections.



Importance:

IV PCAs are commonly used in palliative care settings to help optimize pain control. Palliative care clinicians should be aware of the benefits, risks, and clinical pearls of IV PCA.

The Literature:

<u>Anesth Analg. 2005 Nov;101(5 Suppl):S44-61.</u>
Patient-Controlled Analgesia

<u>Benefits</u>

- On-demand dosing
  - Increases patient autonomy
  - Decreases delays with nurse-administered boluses
- Customizable

<u>Risks</u>

- Basal dosing overrides negative feedback safety mechanism
  - Sedated patients do not press the bolus button
- Dosing by proxy

Dosing parameters:

<u>Opioid Naïve</u>

Opioid	Demand Dose	Lockout (mins)	Continuous basal
Morphine	1-2mg	10-12	0-2mg/h
Hydromorphone	0.2-0.4mg	10-12	0-0.4mg/h
Fentanyl	20-50mcg	10-12	0-60mcg/h

Lockout interval based on peak concentration of IV opioid to avoid dose-stacking if goal is pain control (and to avoid over-sedation)

<u>Opioid Tolerant</u>

- Can convert pre-existing long-acting regimen to basal rate
  - Direct approach: MS Contin 60mg PO Q8H → 180mg OME → 60mg IV morphine per day → divide by 24 hours → 2.5mg/h IV morphine
  - Conservative approach: MS Contin 60mg PO Q8H → 180mg OME → reduce by 1/3 for continuous infusion rate→ 120mg OME → 40mg IV morphine per day → divide by 24 hours → 1.5 mg/h IV morphine (rounded down)
- If not utilizing basal rate, can titrate bolus dose to effect and then utilize those doses to guide basal rate calculations/conversions

<u>Dose titrations</u>

- Dose titrations occur similarly to dosing other opioid routes of administration
- If uncontrolled, severe pain – increase dose by 50-100%
- If uncontrolled, mild-moderate pain – increase dose by 25-50%

CLINICAL PEARL: Patient-controlled analgesia is an effective way to manage acute pain.

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Switching to fentanyl patch from PCA

Cancer. 2001 Dec 15;92(12):3056-61.

A safe and effective method for converting cancer patients from intravenous to transdermal fentanyl

Methods: prospective evaluation of 15 cancer patients transitioned from IV to TD fentanyl

Results:

- Pain intensity, sedation, and hourly PCA administration appeared to remain stable throughout the transition

Conclusion:

- Conversion from IV to transdermal fentanyl is safe and effective using 1:1 (IV:TD) conversion ration and two-step taper off continuous infusion over 12 hours

Conversion strategy proposed

- Conversion ratio of IV fentanyl to TD fentanyl: 1:1
- Fentanyl TD patch onset of action: 12 hours; peak: 24 hours
- Possible 2-step transition strategy
    - Basal rate:
        - Convert to fentanyl patch dose (if opioid other than fentanyl in IV, decrease for cross-tolerance) and apply patch
        - Continue current basal rate for ~6 hours
        - At hour 6 after TD patch application, decrease basal rate by 50%
        - At hour 12 after TD patch application, discontinue basal rate
    - Bolus:
        - Continue available bolus PRN for 24 hours after patch application
        - Convert bolus dosing to PO dosing, if able

Bottom Line:

- PCA is helpful for acute pain while trying to achieve consistent opioid plasma concentrations and avoid peaks and troughs
- Can utilize PCA to assist with transition from IV opioids to fentanyl patch once stable dose is achieved via PCA
- Be cognizant of opioid requirements and recognize that basal rate overrides feedback safety mechanism of sedation before respiratory depression

CLINICAL PEARL: Patient-controlled analgesia is an effective way to manage acute pain.