Simplifying PCA’s

Understanding APS PCA Documentation:

a/b/c

a = patient demand dose
b = time frame between demand doses
c = continuous infusion rate in mg/hr

Example:

0.4/8/0.2 can be interpreted as:
0.4mg per demand every 8 minutes with continuous infusion at 0.2mg/hr

Nurse Boluses:

- Nurse bolus should be double the patient’s demand dose
  - Example: 0.2/8/0 Nursing bolus should be 0.4mg
  - Nursing bolus every 30-60 minutes
- Nursing should be instructed to use boluses for activities that cause increased pain i.e:
  - Physical therapy
  - Respiratory Therapy
  - Coughing episode
  - Going for walks
- Nursing boluses are not for uncontrolled pain at rest. These patients should be re-evaluated for increase in demand dose or re-educated on pain expectations if needed.

Opioid Naïve Patient Starting Dosages:

Morphine 2/8/0 – ONLY if normal creatinine
Dilaudid 0.2/8/0

Opioid Sensitive Patients:

Morphine 1/8/0 – ONLY if normal creatinine
Dilaudid 0.1/8/0

Opioid Tolerant Patients:

1. Complete opioid history with long acting, short acting meds and how often patient takes meds.
2. Calculate 24 hour Oral Morphine Equivalent Dose (MED)
3. Use 24 hour MED to determine hourly dosage of dilaudid or morphine.
   a. For patient using high dosages of opioid dilaudid may be better as frequent vial changes of PCA can result in delays in patient medication administration.
4. Dose may need to be adjusted if home pain is not controlled with current regimen. Consider increasing the dose by 50-100% for post-operative pain control.
Example:

- Home meds:
  - OxyContin 30mg TID
  - Hydrocodone 10mg every 4 hours PRN (patient uses 6 tablets daily)

- OxyContin total dose = 90mg
- Hydrocodone total dose = 60mg

<table>
<thead>
<tr>
<th>Oxycodone</th>
<th>Morphine</th>
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<tbody>
<tr>
<td>90</td>
<td>X</td>
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<td>20</td>
<td>30</td>
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\[ X = 135 \text{mg morphine} \]

<table>
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<td>60</td>
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\[ X = 60 \text{mg Morphine} \]

- Total MED = 195mg morphine
  - \[ X = 9.75 \text{mg dilaudid/24 hrs} \]
  - \[ 9.75/24 = 0.4 \text{mg dilaudid/24 hours} \]

- May consider increasing PCA dose by 50-100% for post op pain control.
  - \[ 0.4 \times 1.5 \text{ (50\% increase) } = 0.6 \]
  - Start PCA demand dose same as basal rate: 0.6/8/0.6
- Basal rate typically **SHOULD NOT** be increased.
- Increase patient’s demand dose by 0.2mg per demand or half of total dose (whichever is higher) as needed until acceptable level of comfort obtained.

**Discontinuing PCA in the Opioid Naïve Patient:**

1. Patient should be on diet that will tolerate PO meds (not clear liquid!)
2. Order PO pain medication.
   a. Combination drugs limit the amount of opioid patients can receive.
   b. Oxycodone can be given in increased frequency.
3. Place order to discontinue PCA after one more hour
   a. This can be found under the “change end time” button when modifying order.
4. Instruct nursing to give PO pain medication with food as soon as possible.
5. If patient has been using frequent nursing boluses add PRN dose for severe pain induced with activity. Recommend using demand dose of PCA every 1-2 hours.

**Discontinuing PCA in Chronic Opioid Patient:**

1. Start patient’s long acting pain medication as scheduled at home when patient is tolerating orals.
2. Discontinue continuous infusion on PCA
3. Continue Demand dose on PCA for 24 hours
4. Calculate patient’s 24 hour opioid requirement. Use AT LEAST a 50% dose reduction when transitioning to PO pain medications.
5. Order PO pain medication.
6. Place order to discontinue PCA after one more hour
   a. This can be found under the “change end time” button when modifying order.
7. Instruct nursing to give PO pain medication with food as soon as possible.
8. If patient has been using frequent nursing boluses add PRN dose for severe pain induced with activity. Recommend using demand dose of PCA every 1-2 hours.
FAQs:

1. IDEAL Opioid Pain Regimen:
   a. One short acting opioid (PCA or Oral opioid)
   b. One breakthrough pain opioid (IV opioid)
   c. One long acting opioid – if patient is opioid tolerant and uses outpatient

2. Oral opioid medications with PCA’s
   a. This makes things more difficult. It is hard to calculate out dosages for transition completely to PO.
   b. Avoid if at all possible.

3. Methadone
   a. Should never be transitioned to a separate opioid to act as basal rate.
      i. Do not use IV dilaudid or morphine in place of methadone.
   b. Use IV formulation of methadone if patient is NPO.
   c. IV Methadone is 2 times the strength as PO. So oral dose should be reduced by ½
      i. I.e. Methadone 10mg PO = Methadone 5mg IV
   d. Transition back to PO methadone when patient able.
   e. IV methadone is only able to be administered in the ICU and stepdown units at this time. Plan accordingly for your patient.

4. Fentanyl Patches
   a. Continue patient on their home fentanyl patch and do not add a basal rate on these patients because their fentanyl is their “basal rate.”
   b. Use the fentanyl dose to calculate out a good demand dose starting rate as above.
   c. Fentanyl has a Black Box warning for use in the immediate post-operative period for controlling acute pain. It is acceptable to use if patient has been on prior to procedure.

5. Increasing chronic pain medication dosages.
   a. Not something we typically do as an acute pain service
   b. Only acceptable if the following conditions are met:
      i. Progression of chronic disease (i.e. cancer progression)
      ii. Primary prescribing physician outpatient is notified and agrees to write for new dosage outpatient.