Disclosure

• Faculty: Darren K Reimer
• No relationships with commercial interests
“Sasha”

• 2 yo female dx’d Neuroblastoma with bone metastasis with central line in place is transferred from Children’s H to Bethesda to be closer to home and supports.

• Mom has 7 mo baby boarder in hospital with her along with the 2 year old.

• On admission S. lies mainly on her stomach, preferably on mom’s lap. She has an I.V. infusion of fentanyl 3.5 mcg/kg/hr (40mcg/hr) with a 25mcg bolus q 30 min prn. She is also on regular acetaminophen and naproxen/omeprazole for her pain. Foley catheter in place.

• 3 days after admission her fentanyl is increased to 4 mcg/kg/hr (bolus unchanged) to see if her pain could be improved.
Sasha cont’d

• 2 days later she is sitting up in bed playing and her Foley catheter can be removed! 48H LOA is successful although her pain control needs have now changed to 4.5mcg/kg/hr.
• Family are living 1 mile N of U.S. border and 45 min S of Steinbach.
• Mom, homemaker, is looking after an infant, a 2 yo who was dying and 3 other children under the age of 7, in an obviously isolated and isolating situation.
• When I visit a few weeks later, the home is serene and S. is very content. Mom is handling the pump without any problem despite not having an formal training
• S. seems more herself at home according to mom.
Sasha cont’d

• No syringes of opioid for other children to play with.
• No need for mom to get up at night to give intermittent injections.
• No fiddling with break-through doses.
• Greater accuracy and responsiveness than the patch.
• No need for nurses to drive 45 minutes to draw up more syringes when doses were changed.
• We were able to use higher flow rates, and therefore doses, because we had I.V. access.
• We were up to rates of 500 mcg/hr near the end.
• Sasha passed away 2 months later at home with her family.
Indications for Infusions

• Poor symptom control (have tried two or more oral or transdermal drugs with or without adjuvants)
• Oral route not available due to disease (dysphagia, N&V, bowel obstruction)
• Final Days – unable to swallow
• High opioid requirements perceived as a burden to patient or family?
• Opioid neurotoxicity. Greater accuracy of dosing
• Palliative sedation
Advantages

• Patient autonomy
• Controlled drug levels
• No need for oral route
• No need to draw up syringes for intermittent injections (nursing time)
Alternatives

- Subcutaneous intermittent
- Patches
- Rectal route
- Edmonton injector
PCA

• Patient Controlled Analgesia (PCA) allows patients to self-administer parenteral analgesics.
• The primary advantage of PCA is to shorten the interval from the time of patient-defined need to the time of analgesic self administration.
• PCA is an efficacious and well-accepted treatment for post-operative pain, sickle cell crisis pain (as young as age 4), and cancer pain that has a good safety profile.
• PCA will provide the same degree of analgesia compared to other delivery systems with the same or less amount of medication.
• PCA allows for more immediate relief of incident (breakthrough) pain and can provide patients with a greater degree of, or sense of, personal control over their pain.

Mypcnow Fastfact #92
Medications

- Morphine
- Hydromorphone
- Midazolam
- Methotrimethazine (+dexamethasone)
- Metoclopramide
- Fentanyl
- Sufentanly
- Glycopyrrolate
- Promethazine
- Ketamine
Cautions

- Renal Failure with morphine and hydromorph.
- Opioid Naïve
- Escalating basal rate too quickly (min 8 hr)
- Family bolusing patient and patient develops toxicity
- Delirious patients
- Sleep apnea
Challenges

• Difficult to access meds quickly
• Somewhat bulky
• Someone needs to be on call if patient at home
• Will ambulance staff do transfers with pump running?
• Cost?
• Availability of pharmacy
• Historical
Considerations prior to starting

• Establish 24hr total daily dose (not opioid naïve)
• Pharmacist available to mix?
• Hospital staff familiar with pump?
• Patient on Palliative Care Drug Access Program?
• Care giver appropriate – is the pump a help or hindrance to family?
• Can palliative care nurse be available for backup?
• Review situation with palliative care physician.
Writing an Rx

• Determine total daily dose of opioid. Be sure to include all opioids and breakthrough doses. If rotating opioids, determine oral morphine equivalency.

• If converting from oral dosing to SC, divide daily dose by 2 to get injectable dose/day. IV and SC are felt to be equivalent ie 1mg morphine IV = 1mg morphine SC

• Divide dose by 24 to get hourly rate. ½ of hourly rate is bolus dose.

• Decide on lockout given patient considerations (usually 20-30 minutes).

• Decide on concentration (SC sites can only handle 3 cc/hr).

• Eg. Hydromorphone LA 12mg po BID with 3 doses of 2mg b/t in past 24h. What would the equivalent pump order be?
Final Rx

- 24mg of LA + 6 mg of SA = 30mg/day hydromorphone
- Divide by 2 to get injectable dose = 15mg/day
- 15 Divide by 24 to get hourly rate = 0.6 mg/hr
- Divide hourly rate by 2 to get bolus = 0.3 mg
- 1mg per ml should be adequate concentration to start
- Rx: Hydromorphone 1mg/ml injectable  M:100 ml S: 0.6ml/hr subcutaneous infusion with 0.3ml bolus q 20 min lockout
Take Home

• “A little learning is a dangerous thing”
  – Alexander Pope 1688 -1744

Call your local palliative care expert if you have questions about starting a pump.
My email is dnareimer1@mac.com if you have more questions.
References

• Mypcnnow.org Fast Facts and Concepts # 28, 54 and 92