CADD Pump
What, Why, When and How

Palliative Care Medicine

CADD Pump

Continuous

Ambulatory

Delivery

Device

Continuous Subcutaneous Infusion (CSCI)

1. What use opioids by CSCI?
2. What opioids can be given by CSCI?
3. How is an order written for CSCI in hospital?
4. What are the important safety features of the CADD pump?
5. What is necessary to know about the CADD pump?
6. What arrangements are required to discharge someone with an opioid infusion?
7. What is done with a patient with a pump in the ER?
8. What about IV opioid infusions?
9. Can medications be mixed in the CADD pump?
10. What does a healthy SC site look like?

Why use opioids by CSCI?

Pharmacokinetic Advantages:

- Less dose fluctuation – may be advantageous for patients with narrow therapeutic index

Practical advantages:

- Easily titrated
- Facilitates patient control
- Reliable records of PRN dosing
- May reduce nursing burden
- Reduce risk of drug diversion

Why use opioids by CSCI?

Disadvantages of Opioid Infusions

- Limited number of opioid options
- Cost
- Burden of pump
- SC site irritation
- Possibility of frequent rotation of sites

When is an infusion indicated?

Consider an infusion when…

- Moderate to severe pain in a non-opioid naïve patient
- Enteral route not feasible/reliable
- Pill burden excessive
- Unpredictable/escalating pain pattern

What opioids can we give by CSCI?

- Morphine
- Hydromorphone

- Fentanyl
- Sufentanil

Pharmacokinetics

Drug	Route	Onset	Peak	Duration
Morphine or Hydromorphone	PO	30 min	60 min	4 hr
	SC	20 min	30 min	4 hr
	IV	10 min	30 min	3 hr
Fentanyl	SL	5 min	20 min	40 min
	IV	1 min	10 min	30 min
	SC	15 min	30 min	60 min
	TD	8 hr	24 - 72hr	72 hr

How is an order written for CSCI in hospital?

- Drug?
- Concentration?
- Rate (mg/hr)?
- Breakthrough dose?
- Breakthrough interval?
- Cassette volume?

What are the important safety features of the CADD pump?

- 3 Lock levels (LL0; LL1; LL2)
- Automatic default to LL2
- Pump alarms
  - Low battery
  - High pressure
  - Cassette unlatched/unlocked
  - Cassette empty
  - Wrong cassette
- Antisyphon tubing
- Air detector
- Maintenance alert (e.g. low battery)

What is necessary to know about the CADD pump?

- Getting information from the pump
- Clinician boluses are possible
- 24 hour telephone assistance is available (must know code)
- In-house resources exist (who to call)

What arrangements are required to discharge someone with an opioid infusion?

- Community Care Access Center (CCAC) Consult:
  - For community pump
  - Nursing care/monitoring
  - Specific requirements of CCAC catchment area
- Physician follow-up
- Correct prescription to appropriate pharmacy

What is done with a patient with a pump in the ER?

- Know how to review the settings
- Assess the SC site
- Know who to call

What about IV opioid infusions?

Possible, but consider…

- Central venous access required for long-term use
- Air detector must be installed & available on pump
- Potential for infection
- Programmed in milliliters (mL) not milligrams

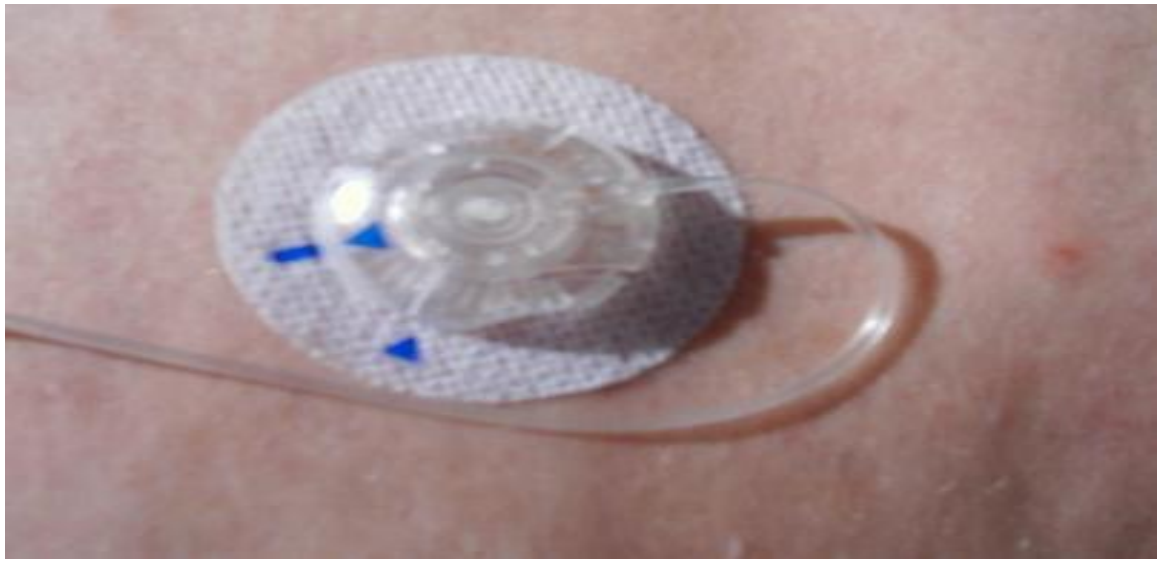
Can medications be mixed in CADD pumps?

Possible, but not recommended because:

- Requires titration of two medications simultaneously (especially problematic for breakthroughs)
- Increased risk of SC site irritation
- Dependant on stability of medications

What does a healthy SC site look like?

- Clean
- No infiltration/edema/inflammation



- Site is changed every 5 - 7 days or PRN
- 25 gauge butterfly is preferred access

What does an unhealthy SC site look like?