

# Patient Controlled Analgesia (PCA) Infusions

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A stylized silhouette of a mountain range in a darker shade of teal, located in the bottom right corner of the slide.

# Objectives

- ◆ Differentiate between opiate naïve and opiate tolerant
- ◆ Describe RN management, documentation, and education of patient with PCA
- ◆ Lists side effects of opiates
- ◆ Describes assessment and treatment of respiratory depression

# Definitions

- ◆ The patient controlled analgesia (PCA) device is a method of providing intravenous (IV) or subcutaneous (SC) opioids with the goals of:
  - improving pain management for the patient
  - providing a better sense of personal control over pain.
- ◆ The PCA device can provide incremental doses and/or continuous infusion

# Definitions

- ◆ **Opioid Naïve:** Patients who have not been taking opioids regularly. Includes most surgical patients and trauma victims.
- ◆ **Opioid Tolerant:** Those patients who have used opioids regularly for approximately 7 days or more

– McCaffery & Pasero, 1999

# PCA and RN Responsibility

- ◆ RNs managing patients with a PCA infusion must have completed the annual pain competency.
- ◆ Equipment competency will be demonstrated annually through unit competency days.

# PCA and RN Responsibility

- ◆ Per MD order, RNs may:
  - ◆ Initiate PCA infusion
  - ◆ Change PCA syringe and tubing
  - ◆ Bolus via the PCA pump (*ALL rescue doses must be delivered through pump*)
  - ◆ Discontinue an infusion

# PCA and RN Responsibility

- ◆ Two RN's must *perform* and *document* independent double checks and verify orders per medication policy when initiating or changing administration of PCA medication.

# PCA and RN Responsibility

- ◆ Instruct patient/family on correct use of the PCA pump.
- ◆ Use age and language appropriate materials, and document on teaching record.
- ◆ Emphasize that *only the patient*, including children, are to administer the incremental dose to prevent risk of oversedation and respiratory depression.
- ◆ PCA supplementation by anyone other than the patient should be reported to physician and documented.

# PCA Question 1

1. Patient's who have not been taking opioids regularly are referred to as
  - A. Opioid tolerant
  - B. Opioid naïve
  - C. Opioid free
  - D. Sober

# PCA Question 2

2. RNs may
  - A. Initiate a PCA infusion
  - B. Change the PCA syringe
  - C. Bolus via the PCA pump
  - D. All of the above

# PCA Question 3

3. When initiating or changing doses in the PCA pump the RN must perform an independent double check with another RN.

A. T

B. F

# Monitoring and Documentation

- ◆ The 24-hour pain management flow sheet is required for monitoring and documentation of this policy.
- ◆ Specific documentation instructions are provided on the flow sheet.

# Disposal of Unused Med

- ◆ Any unused medication remaining in the PCA pump should be wasted, witnessed, and appropriately documented per medication policy.

# Continuous (basal) Infusions

- ◆ Continuous Pulse Oximetry mandatory for 1<sup>st</sup> 24 hrs
- ◆ For pediatric population, consider continuous pulse oximetry for high risk groups, such as patients less than 5 years of age and opioid naïve.

# PCA Question 4

5. Any unused medication remaining in the PCA pump should be wasted and witnessed like any other narcotic waste.

A. T

B. F

# Side Effects of Opioids

- ◆ Constipation
- ◆ Nausea
- ◆ Vomiting
- ◆ Pruritis
- ◆ Sedation
- ◆ **Respiratory Depression**

# Respiratory Assessment

Includes:

- ◆ RATE
- ◆ DEPTH
- ◆ RHYTHM
- ◆ USE OF SUPPLEMENTAL OXYGEN

# PCA Risk Factors for Respiratory Depression:

- ◆ Age > 70 years
- ◆ Basal infusion with PCA
- ◆ Renal, hepatic, pulmonary, or cardiac impairment
- ◆ Sleep apnea (suspected or history)
- ◆ Concurrent CNS depressants
- ◆ Obesity
- ◆ Upper abdominal or thoracic surgery
- ◆ IV PCA bolus >1 mg.

# Nocturnal Monitoring

- ◆ **Nocturnal hypoxia is a risk**
- ◆ Assess rate, depth and rhythm of respirations *while patient is ASLEEP!*
- ◆ Do not awaken – and *then* assess!
- ◆ Patients with respiratory depression or oversedation can easily be stimulated to a higher level of consciousness and an increased respiratory rate!
  - ◆ (Nurse Advise-ERR, 1/2005)

# Pediatric Considerations

- ◆ Risk factors for respiratory depression with PCA include:
  - Less than 2 months of age
  - Hemodynamic instability
  - Renal insufficiency
  - Hepatic dysfunction
  - Morphine basal rate of  $>2$  micrograms/kg/hr
  - Concomitant administration of sedatives, hypnotics, or antihistamines
  - Concurrent use of basal opioid infusions.



# Pediatric Considerations

- ◆ Cognitive, developmental, and physical ability considerations
  - Child must understand these concepts:
    - ◆ stimulus (pain)
    - ◆ response (pushing button)
    - ◆ delayed result (pain relief)
    - ◆ goal is pain control and relief, not elimination of pain

# Pediatric Considerations

- ◆ **Contraindications** to PCA use include patient's inability to:
  - activate device
  - understand concepts of self-administration
  - understand and report pain relief obtained

# PCA Question 5

6. Side effects to monitor when a patient is on PCA therapy include

- A. Nausea, vomiting
- B. Pruritis
- C. Sedation, respiratory depression
- D. All of the above

# PCA Question 6

7. The nurse should assess rate, depth and rhythm of respirations while the patient is asleep because

A. Patients on PCA therapy are at risk for nocturnal hypoxia

B. Nocturnal hypoxia can only be assessed while patient is sleeping

C. Both A and B

D. None of the above

# PCA Question 7

10. After initiation of PCA therapy oxygen saturation should be monitored
  - A. Continuously for first 24 hours
  - B. At least every 4 hours after first 24 hours
  - C. ½ hour after any order change
  - D. All of the above

# PCA Question 8

4. A 14 year old has a PCA pump. Who may operate the pump to administer incremental doses to this patient?
- A. The patient's parents
  - B. The patient's legal guardian
  - C. The patient only
  - D. All of the above

# Adult Pain Management Flow Sheet

- ◆ Slides 14 and 15 are screenshots from the Adult Pain Management Flow Sheet which should be used to answer questions 9 & 10.

(See highlighted areas.)

## General Instructions for Assessment, Monitoring and Documentation of Pain Management:

### 1. Nursing Flowsheet

1. On admission or on initiation of continuous pain management therapy: document vital signs [count respiratory rate for 1 minute and assess for DEPTH of respirations, blood pressure, temperature, pulse, pain score], oxygen saturation, and pain/sedation score.
2. Subsequent monitoring to include: complete vital signs, oxygen saturation, sedation and neurological score q4h.
3. If any type of rescue pain medication given or prescription change made, document vital signs within ½ hour after the dose given or prescription change.

### 2. Pain Management Flowsheet

- a. On initiation of continuous pain management therapy, document: respiratory rate, pain score, sedation score q1h x 12 hours, then q2h x 12 then q4h until discontinued.
- b. Oxygen saturation monitoring: Continuous O<sub>2</sub> saturation monitoring for initial 24 hours, then at a minimum of every 4 hours and ½ hour after any order change.
- c. Document double checks (signature by 2 RNs) at 0700 and 1900.
- d. Document sedation level, pain score, O<sub>2</sub> saturation, respiratory rate within ½ hour after rescue dose or prescription change.

### 3. MAR

### Clinical Practice Points for PCA:

“No patient has succumbed to opioid induced respiratory depression while awake.” (APS, 1999, p.30)  
“Sedation precedes respiratory depression, therefore sedation is a vital component of monitoring and assessment of patients with PCA.” (Hagle et al, 2004)

**CAUTION \*\*\* Risk Factors for respiratory depression with IV/PCA include:** age greater than 70 years; basal infusion with IV/PCA; renal, hepatic, pulmonary, or cardiac impairment; sleep apnea (suspected or history); concurrent central nervous system depressants; obesity; upper abdominal or thoracic surgery; and IV PCA bolus >1 mg. (Hagle, et al, 2004)

**CAUTION \*\*\* Consider CAREFULLY basal infusion for post-operative opioid naïve patient.**

**CAUTION \*\*\* Consider/review prior PO/IV PRN/Standing opioid order and ANY CNS depressants (diphenhydramine, lorazepam, promethazine, etc.).**

### Clinical Practice Points for Subcutaneous PCA Infusions:

- Maximum 3 mL per hour infusion rate
- Rotate needle site every 3 days.

### Clinical Practice Points for Peripheral Nerve Blocks:

Adverse side effects: numb lips, ringing in the ears, metal taste in mouth, sudden tired-ness and/or shortness of breath. If any side effects, clamp off the pump tubing and/or turn the pump off. Notify the physician.

\*\*\* NEVER cut the peripheral catheter

## PCA Question 9

8. According to the **Adult Pain Management Flow sheet**, monitoring the sedation score of patients receiving PCA therapy is vital because sedation precedes respiratory depression.

- A. True
- B. False

# PCA 10

9. According to the **Adult Pain Management Flowsheet**, after initiation of PCA therapy, the patient's pain score, respiratory rate and sedation score should be monitored
- A. q1h x 12, q 2h x12, then q 4h
  - B. q 30 min x 12, then q 4 hours
  - C. q 2h x 12, q 4h x 12 then q 8h
  - D. q1h x 4 then q 4h

# Congratulations!

- ◆ You have completed the module on Moderate Sedation!
- ◆ If you would like additional information on PCA Infusions please see policy C-55 PCA Infusion