Olive View-UCLA MEDICAL CENTER

COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES

Policy Title:	**PATIENT CONTROLLED ANALGESIA AND NARCOTIC INFUSIONS: PERIPHERAL AND CENTRAL VENOUS ADMINISTRATION**		
Category:	10 - Medication Management	**Policy No.:**	1026
Originally Issued:	5/22/2008	**Update (U)/Revised (R):**	9/22/2017
Distribution:	**Hospital-Wide** ☒	**If not Hospital-Wide, Other:**	

PURPOSE:

To outline the management of patients receiving self-administered analgesia via infusion.

Patient Controlled Analgesia (PCA) allows the patient to self-administer an analgesic using the PCA pump at a dosage predetermined by the physician. The purpose of this procedure is to assure the correct setup and programming of the PCA and to provide guidelines for routine assessment and care of the patient using PCA. When the patient requires a continuous narcotic infusion that exceeds the ability of the PCA, the appropriate rate of continuous infusion should be provided by an IV infusion pump. PCA provides the patient with the opportunity to participate in his/her treatment.

All patients receiving PCA must have End Tidal Carbon Dioxide (EtCO2) monitoring unless otherwise indicated (or unless contraindicated- See End Tidal Carbon Dioxide (EtCO2) Monitoring (Used with PCA or Opioids) Policy and Procedure.

DEFINITION(S):

None

POLICY:

None

PROCEDURE:

A. Adult patient eligibility criteria:

1. Patient requires parenteral narcotic pain relief for:
   a. Post-operative pain
   b. Severe pain (acute or chronic)
   c. Disease exacerbation resulting in painful episodes (e.g., hemophilia, sickle cell crisis, cancer pain)
2. Mentally alert with clear sensorium and able to understand use of PCA.
3. Physically able to operate PCA device.
4. Patient with a history of substance abuse may use PCA.

B. Pediatrics eligibility criteria: In addition to the above:
   1. At least 10 years of age: alert, has satisfactory cognitive ability to understand as well as comply with regimen and have no known allergies to the medication being infused.
   2. Less than 10 years of age: the use of Opioid Infusion via PCA pump must be for continuous infusion only unless documented that the patient understands use of the PCA.

C. Ineligible Patients:
   1. Neurological, physical or psychological condition which limits their ability to self-administer medications.
   2. Respiratory impairment or disease which could be exacerbated by narcotic analgesia.

D. Physician's Order:
   1. Determination by the primary provider whether the patient is opioid naïve or opioid tolerant is critical to the pain management process.
   2. Conservative PCA dosing guidelines are provided for patients who have not developed a tolerance to opioids.
   3. Determination of opioid tolerance or opioid naivety is done by the physician immediately preceding the intended course of PCA therapy.
      See definition below

      The following definition is provided by the FDA. See PO to I.V. conversion from the table below

      <u>Opioid Naïve Defined:</u>
      Patient who has not been taking the minimum drug/ dose, for at least a week:
      - Morphine 60 mg PO/ 20mg I.V. daily
      - Oxycodone daily 30 mg PO daily
      - Hydromorphone (Dilaudid) 8 mg PO 1.6 mg I.V. daily
      - Or equianalgesic dose of another opioid

      The following conversion table is provided from the San Diego Patient Safety Taskforce to assist healthcare professionals in determining dosing conversions:

TABLE 1. Equianalgesic Table Conversion IV to PO		
Opioid	**Parenteral**	**PO**
Codeine	130 mg	200 mg
FentaNYL	0.1 mcg	- -
HYDROcodone	- -	30 mg
HYDROmorphone	1.5 mcg	7.5 mcg
Morphine	10 mg	30 mg
Oxymorphone	1 mg	- -
Osycodone	- -	20-30 mg

High risk patients should be strongly considered for telemetry with continuous pulse-ox in 5C Telemetry, Step-down or ICU, at the physician's discretion. Please consider the following additional patient dosing RISK FACTORS when ordering PCA:

- Obesity
- Low body weight
- Concomitant medications (opiates and non-opiates) that potentiate sedative effect of opiate PCA Pre-existing conditions (such as asthma, COPD, and sleep apnea)
- Advanced age (> 65 y/o)

1. PCA administration requires a physician's order. SPO2 (continuous pulse oximeter) monitoring also requires a physician's order.
2. The physician selects the MED/SURG Patient Controlled Analgesia PCA Subphase, and must fully complete the order in the electronic health record.
   a. Standard PCA orders for Opioid Naïve Adult Patients for morphine and hydromorphone (Dilaudid) are included on the Patient Controlled Analgesia Physician's Order Set
   b. PCA dosing is ordered and programmed into the pump in milligrams only.
   c. The following table contains PCA dosing parameters for opioid naïve adult patients.

TABLE 2. PCA Parameters for Opioid Naïve Adult Patients		
	Morphine	**HYDROmorphone (Dilaudid)**
Strength	1 mg/ml	0.5 mg/ml (500 mcg/ml)
Loading Bolus	2 mg	0.2 mg (200 mcg)
PCA Dose	1 mg	0.1 mg[1] (100 mcg)
Lockout	10 minutes	10 minutes
Basal	**Not recommended for starting PCA**	
1 – Based on current OV HYDROmorphone dosing guidelines		

For patient on chronic maintenance opioids, consider continuing same oral opioid or converting 50% of the PO opioid dose into hourly IV basal rate. Consult pharmacy for PO to IV conversion."

Example:

a. Calculate morphine use in 24 hrs: Morphine PO 60mg q12h = 120mg po morphine/24 hrs.

b. Convert PO morphine to IV morphine: 120mg po morphine X (1mg IV morphine/3mg po morphine) = 40mg IV morphine daily
c. Convert IV morphine into hourly dose = 40 mg/ 24 hrs. = 1.6mg/hr. IV morphine
d. 1.6mg/hr. IV x 0.5 = 0.8mg/hr. IV morphine

3. PCA orders are entered in the electronic health record.

E. PCA Administration:
1. Only an R.N., who has attended the PCA in-service may initiate the PCA.
   a. Verify order for PCA.
   b. Employ an independent double-check.
      i. Two RNs must verify correct programming of the PCA pump at the time that PCA is initiated.
      ii. All rate changes must be verified by two (2) RNs, and documented on the electronic health record.
   c. For postoperative patients, the PCA pump may be initiated in the Post-Anesthesia Care Unit (PACU) and transported with the patient to the patient care unit.

2. All PCA medication is infused via PCA pump.
   a. Syringe to be changed every 24 hours. When changing the Syringe, be sure to clear alarms, change syringe and concentration.
   b. Tubing is to be labeled, dated and changed every 96 hours.
   c. PCA tubing should always be the primary line on an infusion pump to keep the line open and for smooth delivery of drug (may have a compatible maintenance IV fluid running attached to the allocated Y site).

3. Pharmacy provides PCA medication in labeled bags using standard concentrations as follows, unless otherwise ordered by the physician:
   a. Morphine 1 ml = 1 mg.
   b. Dilaudid 1 ml = 0.5 mg.

4. Opioid Security System
   a. Opioid syringe storage and documentation will follow the same policy and procedures as standard opioids.
   b. Each unit will have a limited supply of lockout keys to be kept with the narcotic keys.
   c. If syringe is opened and not used, discard in pharmaceutical waste and document wasted medication in Pyxis.

F. Bolus Doses are to be used on a limited basis. The system is designated to meet the patient's need via manipulation of PCA dose, lockout interval and continuous infusion rates. If the patient requires increased dosing, orders must be written to vary these components.

G. Change of Shift Responsibilities: Independent verification and clearing must be completed at the bedside by the off-going and incoming nurse.

H. Change of Shift Responsibilities:
   1. The TRANSFERRING UNIT will report the volume infused at the time of transfer, programming information and clear and document the volume prior to transfer to the unit.
   2. The RECEIVING UNIT will verify orders with the pump program at the time the patient is received on the unit.

I. Patient Monitoring and Documentation:
   1. Document pump number in the electronic health record (If a pump problem should arise, the R.N., should remove the pump from service and contact BioMedical department).
   2. Vital signs, mental status (level of consciousness and orientation), pain level assessment and intervention initially Q15 minutes x 1, Q30 minutes x 1, Q2 hours x 1 and every 4 hours thereafter if adequate pain management achieved and vital signs stable.
      a. Measure respiratory rate, oxygen saturation and other vital signs as appropriate.
      b. Respiratory Rate Assessment: Respirations shall be counted for 30 seconds, and if respiratory rate is less than 12/minute, then it shall be counted for a full minute. Discontinue PCA if patient's respiratory rate is less than 10 per minute, very shallow and ineffective, or if patient is unarousable or difficult to arouse.

         ****Stop PCA, maintain IV and NOTIFY MD STAT.**

      c. Record PCA usage in "mg" in the electronic health record.
         Document total amount of opioid used at the end of each shift. Record total dose received (mgs) and number of PCA attempts since previous notation.
         NOTE: Clear the PCA total dose each time you record the dose received.
      d. Call MD if any side effects of medication such as pruritus, urinary retention, respirations of <10/minute, nausea/vomiting, constipation, altered mental status, O2 sat <94%, decreased BP of >20mmHg or unrelieved pain.

J. Side Effects Management:
   1. PCA is titrated to maximize pain relief while minimizing side effects.
      a. See physician's orders for specific drug orders.
      b. When side effects develop, notify and collaborate with physician on dosing changes and side effect management.
      c. If pain persists, physician should be notified to adjust dosing with possible addition of adjuvant medication(s).
      d. Assess and document bowel function and mental status every day.

2. It is important to determine patient's mental status, whether patient is awake or asleep. (Can be done during vital sign checks).
3. If patient appears to be sleeping, assess if he/she can be aroused by touching patient, bumping the bed slightly, or calling out the patient's name.
4. Naloxone (Narcan) should be administered according to physician order when appropriate.

**Please Note: The above situations may be managed differently for terminal or comfort care patients – check with M.D.

K. Patient Education:
1. Instruct patients on how to self-administer PCA medication (with involvement from Anesthesia as appropriate) when PCA is initiated. Teach the purpose and function of PCA. Teach anticipated side-effects.
2. Instruct patients preoperatively when it is known that PCA will be used. Teach the patient and family to notify the nurse if vomiting, respiratory distress, altered mental status, persistent pain, dizziness, seizure activity are present.
3. Instruct and reinforce to family/caregivers that only the patient may administer PCA doses.
4. Provide patient education handout on PCA. Document teaching in the electronic health record.

ATTACHMENTS/FORMS:

None

REFERENCE(S)/AUTHORITY:

1) Tool Kit - Patient Controlled Analgesia (PCA) Guidelines for Care for the Opioid Naïve Patient. San Diego Patient Safety Taskforce, 2008.
2) Physician-Patient Alliance for Health & Safety, PCA Checklist, 2012.
3) AHCPR (1992). Acute Pain Management: Operative or medical procedures and trauma. Clinical Practice Guidelines, AHCPR Pub. No. 92-0032
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5) McCaggery, M., Pagero, C. (1999). Pain: A Clinical Manual – Second Edition. St. Louis: Mosby American Pain Society (APS): Principles of Analgesic Use in the Treatment of Acute and Cancer Pain – 4th Edition. Glenview, IL (1999)
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7) Infusion Nurses Society, L.A. (2011). Infusion Nursing Standards of Practice. Journal of Infusion Nursing, 34 (1S), 25, 31,41, 55, 87.

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