

## USE OF THE PCA PLUS II FOR ANALGESIA

**PURPOSE:** To allow the patient and/or nurse to administer an analgesic drug utilizing the PCA Plus II.

### MANDATORY REQUIREMENTS:

1. The physician's order must include drug, dosage and lockout interval (in PCA mode). The four hour limit may be omitted. When a verbal or telephone order for PCA pump set-up or PCA pump setting changes is received, the nurse **MUST** write this order on a PCA Order Sheet (and not on a regular physician's order sheet).
2. Absolutely no other narcotics, sedatives or any other medications with sedative effects are to be given to the patient unless approved by the physician who ordered the PCA pump or by the Pain Management Consultant (PMC) if the pump was ordered by them. This also includes medications given for procedures being performed on the patient (Endoscopy, insertion of a chest tube, etc.). (Refer to the Pain Management Service PCA Order Set.) Until the PCA is discontinued, document on the MAR and in the kardex that the PMC ordered the PCA.
3. **When the PCA pump is initiated, the RN MUST document the pump's PMID number (the 6 digit number on the silver sticker) in a focus nursing note in the patient's chart.** If for some reason the PCA pump is changed out and a different pump is used, the PMID number of the new pump **MUST** also be documented in a nursing focus note.
4. At the beginning of each shift, the nurse must document in the nursing notes the pump settings and type of pain medication being used. Every eight hours, the nurse must document on the MAR the amount of pain medication used.
5. **Pump settings and type of pain medication being used MUST be verified by a second licensed nurse prior to initiating PCA therapy, with any change in pump settings, with each medication vial change or when a patient is received in transfer from another unit. Both the nurse who is initiating PCA therapy, changing pump settings, changing the medication vial or receiving the patient in transfer and the nurse who is double checking to be certain that the correct medication is in the pump and that the pump is set correctly for the medication and prescribed dosage will initial the MAR or other document used for documenting medication administration. At all times, the physician's order or the MAR will be used by both nurses to verify the pump settings and medication are correct.**
6. **When a patient with a PCA pump is transferred from one unit to another, the nurse receiving the patient in transfer will document in a focus nursing note the amount of narcotic left in the medication vial at the time the patient arrives on the new unit.**

### GENERAL INFORMATION:

1. The initials "PCA" are an abbreviation for "patient controlled analgesia". The PCA Plus II pump is most often referred to as the "PCA pump".
2. Refer to the Patient Care Standard for "Pain Management".
3. The PCA Plus II may be used as an alternative delivery mechanism when frequent IV bolus pain medication is anticipated, even when the patient is not allowed to self-administer the medication.
4. Only an RN can initiate a PCA infusion or change pump settings. RNs and LPNs may change the empty medication vial, document the amount of medication used during the shift, verify pump settings, witness drug wastage and discontinue a PCA pump.

- 5. Identify the patient and instruct in use of PCA. Give patient the information pamphlet entitled "To Help You Rest Easy..." **Both the patient and family should be instructed that only the patient is allowed to give doses of pain medication.** Assess understanding and answer any questions the patient and/or family may ask. Document teaching on the Patient/Family Education Record.
- 6. PCA narcotics may cause drowsiness and respiratory depression. Careful assessment of level of consciousness, vital signs and especially respiratory status should be made during infusion. (Refer to the Patient Care Standard for "Pain Management".)
- 7. The PCA line should not be interrupted unless absolutely necessary. If necessary to use, the lower portion of tubing should be well flushed prior to and after use. Provide for alternative pain relief by consulting with the physician if the PCA must be interrupted for an extended period of time.
- 8. A maintenance IV infusion must be maintained for duration of the PCA therapy with type of fluid and rate specified by physician order.
- 9. The PCA medication vial must be changed at least every 24 hours. Change out the old injector and tubing with new every 72 hours.
- 10. Keep the pump plugged in except during transport or ambulation.

**EQUIPMENT:**

- PCA Plus II pump
- Medication as ordered in pre-filled injector vial
- PCA Tubing Set
- IV Fluid and Tubing
- Venous Access Device
- PCA pump key

**PROCEDURE for PCA Plus II Pump Set-Up (by an RN only):**

- 1. Verify the physician's orders for medication, dosage (mg.), lock out interval (minutes in PCA mode), 4 hour limit if applicable (mg.) and loading dose if applicable.
- 2. Set up PCA Plus II pump and injector vial.
  - A. Injector Vial:
    - 1. Sign out narcotic on the Controlled Drug Administration Record (CDAR) as though the entire amount will be administered (30 ml.).
    - 2. Assemble PCA vial, injector and PCA tubing following instructions on the package.
    - 3. Hold the vial/injector with the male luer connector in the upright position. Exert slight pressure on the vial to prime the tubing. Close the slide clamp on the PCA tubing. Maintain the sterility of the tubing during priming procedure. **(CAUTION: Disconnect the PCA set from patient before priming tubing.)**
  - B. PCA Plus II Pump:
    - 1. Open security door.
    - 2. Activate drive release mechanism by pinching levers and moving to uppermost position.
    - 3. Load injector vial assembly **making sure to turn vial so that the color strip showing the medication name and strength is facing outward.** This information must be visible through the PCA door. Insure the vial is firmly placed in the vial holder

4. Move drive assembly to lowest position making sure that the flange on the injector "clicks" into position. Proper loading of the syringe will turn the unit on and activate it. Open the slide clamp on the PCA tubing.
5. Pump is turned on by either inserting or removing vial or by pressing the [ON] key on the keypad.
6. Start-up sequence will be performed by the pump. After this sequence, user is prompted to begin purge cycle. Press [NO] to omit purge cycle. **(CAUTION: If purge cycle is used, disconnect the PCA set from the patient before starting purge cycle. Stop purging after flow is seen at the end of PCA set.)**
3. Initiate PCA Plus II Pump:
  - A. Plug pump into electrical outlet.
  - B. Program the PCA Plus II pump:
    1. Select drug and concentration to be administered using [YES], [NO] keys on keypad. Follow prompts.
    2. Program Loading Dose, if ordered.
    3. Select Mode of Delivery (PCA, CONTINUOUS, PCA + CONTINUOUS) as ordered.
    4. Select dose to be delivered in mgs.
    5. Set Lockout Interval if using PCA or PCA + CONTINUOUS Mode.
    6. Set Continuous rate if ordered.
    7. Set 4 hour limit in mgs., if ordered.
    8. Press [HISTORY] to confirm settings.
    9. Close and lock security door.
    10. **Prior to administering the first dose of medication, a second licensed nurse MUST verify the pump settings and medication. The RN initiating the PCA pump and the nurse double checking the pump settings and medication will initial the MAR or other document used for documenting medication administration. Both nurses will take either the MAR or the physician's order to the patient's bedside and use it to verify that the pump settings and medication are correct.**
    11. **The RN MUST document the pump's PMID number (the 6 digit number on the silver sticker) in a focus nursing note in the patient's chart.**
  - C. Connect primed IV tubing to the Y-adapter on the PCA tubing. Open roller clamp on tubing and flush medication from PCA tubing below Y-adapter. Maintain sterility of tubing during priming procedure.
  - D. Connect PCA tubing to the IV access device and initiate IV fluid at the prescribed rate. Press [RESET/START] key on the keypad.

**PROCEDURE to Initiate PCA Plus II for Nurse IV Bolusing (initial set up by an RN only):**

1. Determine mechanism of delivery ("Loading Dose" or "PCA Dosing").
  - A. For "Loading Dose":
    1. Plug pump into electrical outlet.
    2. Program the pump:
      - a. Select drug and concentration to be administered using [YES], [NO] keys on the keypad. Follow prompts.

- b. Program Loading Dose. Prior to administering a dose of medication, a second licensed nurse MUST verify the pump settings and medication. The RN initiating the PCA pump and the nurse double checking the pump settings and medication will initial the MAR or other document used for documenting medication administration. Both nurses will take either the MAR or the physician's order to the patient's bedside and use it to verify that the pump settings and medication are correct.
    - c. The RN MUST document the pump's PMID number (the 6 digit number on the silver sticker) in a focus nursing note in the patient's chart.
  3. Turn off machine.
  4. Close and lock security door.
  5. Repeat as needed according to the physician order.
- B. For "PCA Dosing":
1. Plug pump into electrical outlet.
  2. Program the pump:
    - a. Select drug and concentration to be administered using [YES], [NO] keys on the keypad. Follow prompts.
    - b. Program Loading Dose for first dose, if desired.
    - c. Select Mode of Delivery (PCA)
    - d. Select dose to be delivered in mgs.
    - e. Select lockout interval based on the physician order. For example, for the order "Morphine Sulfate 2mg IV Q1H PRN", the lockout interval could be 60 minutes.
    - f. Indicate [NO] for 4 hour dose limit.
    - g. Confirm settings.
    - h. Close and lock security door.
    - i. Prior to administering the first dose of medication, a second licensed nurse MUST verify the pump settings and medication. The RN initiating the PCA pump and the nurse double checking the pump settings and medication will initial the MAR or other document used for documenting medication administration. Both nurses will take either the MAR or the physician's order to the patient's bedside and use it to verify that the pump settings and medication are correct.
    - j. The RN MUST document the pump's PMID number (the 6 digit number on the silver sticker) in a focus nursing note in the patient's chart.
  3. If first dose not given as a loading dose, press button.
  4. Press Patient Control Button as needed according to the physician order.
  5. Remove Patient Control Button from room and place in a secure area in between doses. (This will prevent accidental dosing.)
  6. Document PRN administration on the MAR.

**PROCEDURE for PCA Plus II Pump Maintenance (by an RN or LPN):**

1. On initial shift rounds, check the PCA Plus II pump for ordered settings and medication. Document in the nursing notes.
2. Monitor the following while the patient is using the PCA Plus II pump:
  - A. Number of mg's. used every 8 hours.
  - B. Sedation level of the patient every 4 hours.
  - C. Comfort or relief level every 4 hours.
  - D. Vital signs every 4 hours.
3. At the end of the shift assess the total number of mg's. used and clear the pump. Unlock and open door. Press [REVIEW/CHANGE]. "Clear dose history and total delivered?" Press [YES]. Follow prompts.
4. Document:
  - A. Vital signs on the Graphic Record.
  - B. Level of sedation, level of comfort and PCA Plus II pump settings on initial shift assessment and any changes from that assessment in the nursing notes.
  - C. Number of mg's. used every shift on the MAR.
  - D. Wasting of Medication:
    1. Complete CDAR as though signing out a narcotic (date, time, patient name and number).
    2. Under physician write "waste" when changing the vial or write "D/C" when discontinuing the PCA Plus II pump.
    3. Sign along with a co-signature by a second nurse for the amount wasted. Fill in drug and strength as well as amount given and wasted.
    4. In the balance forward place a dash (-) as the balance is unchanged.
  - E. Discontinuation of PCA therapy in the nursing notes.

**PROCEDURE for Adding a New Vial to the PCA Plus II Pump (by an RN or LPN)**

1. Assess pump for the need for a new vial of medication or check physician orders for a change in medication. The PCA Plus II pump will alarm when the syringe is empty. The alarm can be silenced for 5 minutes temporarily by pushing the [SILENCE/NO] key.
2. Obtain a new vial of medication from the narcotic lock-up and sign out the medication on the Controlled Drug Administration Record (CDAR) as though the entire amount will be administered.
3. Close slide clamp on PCA side which is attached to vial/injector.
4. Remove the cap from the new vial.
5. Unlock the PCA Plus II pump and turn it [OFF]. (Pump will retain settings and history for 60 minutes of previous use.) Remove the old vial, with injector intact, by grasping the vial at the top and gently pulling forward.
6. Remove vial/injector assembly from infusion pump. Rotate vial counterclockwise until injector is removed from stopper.
7. While maintaining sterility, connect new vial to injector by rotating vial clockwise about 3 turns or until stopper is pierced by metal cannula. To purge air from new vial, disconnect PCA set from injector. Advance injector allowing solution to purge air from inverted vial. Reattach PCA set to injector.

8. Load injector vial assembly and insure it is firmly placed in the vial holder. Move drive assembly to lowest position making sure that the flange on the injector "clicks" into position. Confirm settings using the [HISTORY] key.
9. Close and lock the security door. Open slide clamp. Press [RESET/START].
10. **Before the patient can resume dosing, a second licensed nurse MUST verify the pump settings and medication. Both the nurse changing the medication vial and the nurse double checking the pump settings and medication will initial the MAR or other document used for documenting medication administration. Both nurses will take either the MAR or the physician's order to the patient's bedside and use it to verify that the pump setting and medication are correct.**
11. Document any waste of medication on the CDAR with a co-signature. (See #4D under Procedure for PCA Plus II Pump Maintenance.)

#### **PROCEDURE for Discarding of Wasted Medication (by an RN or LPN)**

1. If changing to a different medication, discontinuing PCA therapy or changing out the old injector and tubing:
  - A. While in the presence of another licensed nurse:
    1. Accurately measure and verify the amount of medication to be wasted.
    2. Completely empty medication from vial by pushing injector/plunger up to top of vial.
    3. Discard medication.
    4. Discard empty vial/injector into sharps container.
  - B. Document any waste of medication on the CDAR with a co-signature. (See #4D under Procedure for PCA Plus II Pump Maintenance.)
2. If changing out a vial with the same medication as used in the previous vial:
  - A. While in the presence of another licensed nurse:
    1. Estimate and verify amount of medication remaining in vial.
    2. As this vial does not have injector/plunger, discard vial with medication intact into sharps container.
  - B. Document any waste of medication on the CDAR with a co-signature. (See #4D under Procedure for PCA Plus II Pump Maintenance.)