Scope: Hospital-wide Patient Care
Document Type: Policy, Procedure
Approved on: 2025-10-02
Next Review Date: 2028-10-02

Care of Patients Receiving Patient Controlled Analgesia PCA and Nurse Controlled Analgesia NCA

Version: 4

Original Date of Issue: June 1995
Additional Approval By: Nursing Practice Council

Note:

- For the purposes of this policy, the term "opioid" refers to morphine, fentanyl, and hydromorphone
- Parenteral Opioids are considered potentially highly toxic drugs. See Medical Orders ==>
- Individual consideration regarding monitoring may be necessary and appropriate in cases such as palliative care, or patients with prolonged opioid use who wish to ambulate. Less stringent monitoring may be indicated in these situations. The nurse is advised to assess the patient and consult the Pain Service when modifications to patient monitoring are being considered.

1.0 Purpose

To provide safe, effective, and timely access to pain medication in an individualized manner.

2.0 Definitions

Patient Controlled Analgesia (PCA): Opioid analgesia activated by a patient and delivered intravenously via a PCA pump. Allows for consistent and individually titrated analgesia.

Nurse Controlled Analgesia (NCA): Opioid analgesia activated by a nurse based upon the nurse's assessment of the patient's pain, and delivered intravenously via a PCA pump

PCA Pump: The Alaris pump used for PCA therapy. For the purposes of this document, PCA pump refers to the pump used to deliver both PCA and NCA therapy.

3.0 Policy

3.1 All *initial* PCAs/NCAs must be ordered by the Acute Pain Service (APS). When APS is following, no opioids or CNS depressants are to be administered unless approved by APS (exceptions: PICU/CCCU, PACU, OR/IGT/DI).

3.2 PCA/NCA setup and administration must be carried out by two RNs or one RN and another regulated individual who demonstrates and maintains the necessary knowledge, skill, and judgement (e.g. NP or Pharmacist). Both staff must sign off the ordered therapy in the medication record/Electronic Health Record, verifying that the infusion rate (if ordered), bolus dose, lockout interval and syringe concentration (where applicable) are correct.

3.3 The PCA order and pump must be checked independently by two RN's or one RN and another regulated individual who demonstrates and maintains the necessary knowledge, skill, and judgement with each change of shift, with any change in PCA/NCA orders, and upon transfer to another nursing unit. Both staff must sign the medication record/Electronic Health Record that the medication and doses prescribed have been verified.

3.4 All patients with a PCA/NCA that require transport off the unit must be accompanied by an RN with a self inflating resuscitation bag, oxygen, and appropriate monitoring equipment including, but not limited to, continuous oxygen saturation monitoring equipment. See Intrahospital Transfer of Patients.

3.5 NCA with a PCA pump can be authorized under special circumstances. Consultation with the Acute Pain Service, a member of the admitting/most responsible team (e.g. MD, PA, NP), and nursing staff is required. An 'NCA' Epic order must be entered to utilize a PCA pump as an NCA. Pump settings are different for this modality, but the monitoring requirements remain unchanged unless it is used for a patient who is palliative.

3.6 All patients receiving PCA/NCA therapy require continuous oxygen saturation monitoring. Assessment, monitoring, and notification parameters are required as per policy Monitoring Requirements for Patients Receiving Opioids.

4.0 Criteria for PCA and NCA therapy

PCA and NCA therapy is indicated for moderate to severe acute pain that requires systemic, parenteral opioids. It is commonly used for post-operative pain management. Other patient populations and conditions include cancer pain, trauma, burn pain, Sickle Cell crisis, and palliative care. In special circumstances, for patients who are unable to safely or effectively use PCA and have been assessed to require rapid or frequent access to parenteral opioids, NCA *may* be an option.

Prior to initiating PCA or NCA therapy, patients must be assessed to meet certain criteria.

4.1 Criteria for PCA Therapy

- Patient is willing to use PCA and must understand concept of PCA use, including when to push the button and how the button works.
- Patient must be able to push the PCA button
- Age alone is not a basis for exclusion of PCA therapy, however, PCA is generally used for children over 7 years of age

4.2 Contraindications for PCA Therapy

- Patient unwilling and/or unable to activate PCA button
- Patient unable to understand and report when pain relief is obtained
- Patients with upper airway obstruction, recent head injury, or hemodynamic instability which result in opioid-induced hypotension or cardiovascular effects

4.3 Criteria for NCA Therapy

- Patient requiring frequent or rapid access to parenteral opioids who, due to age, or cognitive or physical ability are unable to understand or use PCA therapy
- Nursing staff willing to use NCA and caregiver agreeable to NCA therapy
- Caregiver(s) understand and agree to not push NCA button

4.4 Contraindications for NCA Therapy

- Patients eligible for PCA therapy
- Unauthorized user of NCA button (i.e. anyone other than RN caring for patient).

- Patients with upper airway obstruction, recent head injury, or hemodynamic instability which result in opioid-induced hypotension or cardiovascular effects

5.0 Equipment

- Alaris Patient Controlled Analgesia Pump (obtained through Transport)
- PCA key
- Straight syringe tubing
- Self inflating resuscitation bag, appropriate size mask, O_2 and suction at bedside.
- Multi-parameter monitor for oxygen saturation and respiratory monitoring, as ordered. See Electronic Physiological Monitoring.
- Naloxone available on unit.
- Pain Assessment Tool. See Pain Assessment.
- Sedation Scale
- Opioid syringe prepared by pharmacy

6.0 Procedure

It is expected that all RNs caring for patients with a PCA attend the in-person PCA Education Class.

Important Steps	Key Points
1. Assess if patient is appropriate for PCA or NCA.	• Refer to indications and contraindications for PCA and NCA therapy (section 4.0) • Therapy is either PCA or NCA, never both
2. Explain the concept of PCA to the child and family and provide them with the PCA/NCA Education Document from AboutKidsHealth	• Use age-appropriate language • Reinforce safety features of lockout and total dose limit • **Emphasize that for safety reasons, only the patient is to press PCA button, and only the RN is to press the NCA button. The PCA/NCA will be discontinued if this safety procedure is not followed.**
3. Acute Pain Service will assess child and order PCA/NCA.	• Physician/APN/delegate from Primary Service must contact Acute Pain Service (APS) on call for Consultation • APS are responsible for the ordering and managing PCA/NCA - ordering/discontinuing of PCA/NCA is restricted to the APS and Pediatric Advanced Care Team (PACT)
4. Discuss pain scale to be used while patient is on PCA/NCA and obtain a baseline pain assessment	• A validated pain assessment tool will be utilized. See Pain Assessment • One pain tool should be used for the patient for consistency of documentation
5. Attach Alaris PCA pump to the point of care unit (PCU) and obtain pre-prepared syringe from Omnicell/Pharmacy.	• PCA pump fits to the RIGHT of the PCU
6. Verify the availability and location of Naloxone (Narcan) and emergency resuscitation	• Naloxone is the opioid antagonist used for the reversal of respiratory depression and other

Important Steps	Key Points
equipment. Place self inflating bag, mask, O2 and suction at patient's bedside.	opioid side effects
7. Confirm patient identity and correct drug using barcode scan medication administration (BCMA) and check for allergies. Verify PCA doses are appropriate for patient's weight.	• Check patient ID and Electronic Health Record for allergies. • Refer to Step 4.3 in Patient Identification
8. Attach Syringe Tubing to Syringe and prime with solution containing opioid.	
9. Obtain PCA pump key, unlock and open cover. Insert syringe into Alaris PCA pump.	
10. Attach the tubing to the patient's intravenous access site. Connect the tubing to one of the multiports that contains a back check valve. Label tubing at the "Y" connection closest to the patient. All concurrent infusions should also be connected to one of the multiports with a back check valve.	• Patient will have 2 IV lines infusing into 1 IV site - a maintenance line and a PCA/NCA line • Extension tubing should not be used unless it is above the "Y" site. The "Y" site should always be closest to the patient • The red multiport can be used for blood work. Do not use this port for any infusions (intermittent or continuous).
11. On the Alaris PCU: Select 'New Patient' to clear previous patient data Select 'Paediatrics', then 'Confirm' Press 'Channel Select' on PCA pump 'Confirm' time of day 'Confirm' syringe type and size Select drug and concentration, then 'Confirm' Confirm drug concentration. Select Infusion Mode Set **PCA Bolus** Dose Set **Lockout Interval** Set **Continuous Dose** (if ordered) Set **MAX limit**. Select 'Yes' and enter 2 hour limit and 'Confirm' Close and lock the door. Remove PCA key.	• **Attention to correct concentration selection is key in preventing a pump set up error** • Continuous dose/infusion is also known as a basal infusion rate or background infusion.
12. The program should be independently double checked using the A2Check procedure and co-signed. Complete line tracing to ensure tubing is unclamped and connections are secure. Press 'Start'. For patients with PCA therapy, instruct the patient to push the PCA button when they feel pain or about 5-10 minutes before performing a painful activity. For patients with NCA therapy, the RN should	• Two RNs or an RN and another regulated individual who demonstrates and maintains the necessary knowledge, skill, and judgement must verify pump program using A2Check and sign off on the Electronic Health Record. • Refer to Administration of Medication and Alone and Apart Check for information about independent double checking and co-signing of medications.

Important Steps	Key Points
push the NCA button when the patient has been assessed to be having pain, the patient is alert, and RR, BP, and level of consciousness are appropriate for opioid administration.	
13. Initial and ongoing monitoring, assessment, and notification parameters must follow Monitoring Requirements for Patients Receiving Opioids	• The linked policy must be adhered to when administering any form of intravenous opioid • A thorough baseline assessment is essential to enable early detection of respiratory depression and decreased level of consciousness • Significant changes in these parameters may indicate either inadequate or excessive analgesia and should be reported to the APS • **Sedation Scale:** **0 - None** - Alert **1 - Mild** - Occasionally drowsy, easy to arouse **2 - Moderate** - Frequently drowsy, easy to arouse **3 - Severe** - Somnolent, difficult to arouse **S - Sleep** - Normal sleep, easy to arouse
14 Continue to monitor patient, assessing and documenting vital signs as per Monitoring Requirements for Patients Receiving Opioids. Perform a detailed pain assessment using a validated pain tool at least q4h or more often until pain relief goal has been achieved. Document pain assessment score on flow sheet and the effectiveness of pain management in progress notes.	• Record pain assessment at rest and on movement • Documented pain assessments promote continuity of care • APS will utilize assessment documentation for decision making about patient's pain management
15. Document cumulative Bolus Attempts (Demands) and Boluses Received (Goods) q1h on the appropriate flowsheet row: Press 'Channel Select' on PCA pump On PCU, select 'Options' Select 'Patient History' Press 'Zoom' to highlight '24 hours' Document PCA/NCA volume infused and clear amount q1h (or as per unit policy) on appropriate flowsheet row.	• Demands and Goods should be documented as a cumulative total from 0001-2400 • **The patient history (demands/goods) must be cleared every 24 hours at 2400hrs.** • If total dose limit for 2 hours is reached, pump will alarm. If this occurs, notify APS. ***Refer to attached '*PCA learning package 2025*' page 9 for more information**
16. Replace opioid solution in syringe once empty or q24h using BCMA to confirm patient ID and correct medication.	• Two RNs or an RN and another regulated individual who demonstrates and maintains the necessary knowledge, skill, and judgement must verify syringe concentration and pump program using A2Check and sign off on the Electronic Health Record. • Refer to Administration of Medication and Alone and Apart Check for information about

Important Steps	Key Points
	independent double checking and co-signing of medications.
17. Assess for side effects such as constipation, nausea, vomiting, pruritus, sedation and urinary retention.	• Anti-emetics are usually prescribed for nausea and vomiting • Consider use of stool softener/laxative to prevent constipation, and I & O catheter for urinary retention. A low-dose naloxone infusion may also be used to treat pruritus and urinary retention
18. If patient is transferred to a unit with a PCA pump infusing, follow Steps 13 - 17 above. To confirm pump is running according to APS orders, press **'Channel Select'** and Confirm pump is set as ordered. The settings will display on the pump screen.	• Confirmation that pump is programmed according to APS orders must be done at start of shift, with any change in orders and when transferring units. • Two RNs or an RN and another regulated individual who demonstrates and maintains the necessary knowledge, skill, and judgement must verify pump program using the A2Check procedure and sign off in the Electronic Health Record.
19. Once PCA has been discontinued, ensure patient has orders for adequate pain control.	• Discard opioid syringe following appropriate procedures for wasting medication and documenting medication waste. • PCA pumps and cords must be sent to CSD to be cleaned then returned to the PACU promptly for storage

7.0 Related Documents

Medical Orders
Intrahospital Transfer of Patients
Electronic Physiological Monitoring
Pain Assessment
Alone and Apart Check
Monitoring Requirements for Patients Receiving Opioids

8.0 References

Cooney, M. F., Czarnecki, M., Dunwoody, C., Eksterowicz, N., Merkel, S., Oakes, L., & Wuhrman, E. (2013). American Society for Pain Management Nursing position statement with clinical practice guidelines: authorized agent controlled analgesia. *Pain Management Nursing*, *14*(3), 176-181.

Cravero, J. P., Agarwal, R., Berde, C., Birmingham, P. Cote, C.J., Galinkin, J., Isaac, L., Kost-Byerly, S., Krodel, D., Maxwell, L., Voepel-Lewis, T., Sethna, N., & Wilder, R. (2015). The Society for Pediatric Anesthesia recommendations for the use of opioids in children during the perioperative period. *Pediatric Anesthesia, (29)*6. 547-571.

Czarnecki, M., Cooney, M. F., & Wuhrman, E. (2024). ASPMN position statement: Authorized Agent Controlled Analgesia. *Pain Management Nursing, 25*(3), 209-210.

Czarnecki, M. L., Ferrise, A. S., Mano, K. E. J., Garwood, M. M., Sharp, M., Davies, H., & Weisman, S. J. (2008). Parent/nurse-controlled analgesia for children with developmental delay. *The Clinical journal of pain*, *24*(9), 817-824.

Czarnecki, M. L., Hainsworth, K. R., Simpson, P., M., & Weisman, S. J. (2018). Parent/nurse-controlled analgesia compared with intravenous PRN opioids for postsurgical pain management in children with developmental delay: A randomized controlled trial. *Pain Medicine, 19*. 742-752.

Donado, C., Solodiuk, J., Rangel, S. J., Nelson, C. P., Henney, M. M., Mahan, S. T., Ullrich, C., Tsegaye, B., & Berde, C. B. (2019). Patient- and nurse-controlled analgesia: 22-year experience in a pediatric hospital. *Hospital Pediatrics, 9*(2). 129-133.

Franson, H. E., & Kingel, J. (2010). Postoperative patient-controlled analgesia in the pediatric population: a literature review. *AANA J*, *78*(5), 374-378.

Joint Commission on Accreditation of Healthcare Organizations. Patient controlled analgesia by proxy. Sentinel Event Alert Issue 2004;33. http://www.jcaho.org/about+us/news+letters/sentinel+ev ent+alert/sea_33.htm

Lehmann, K. (2005). Recent developments in patient-controlled analgesia. Journal of Pain and Symptom Management, (29) (5S) S72-S89.

Macintyre, P. (2001). Safety and efficacy of patient-controlled analgesia. British Journal of Anaesthesia, 87, (1), 36-46.

Monitto CL, Greenberg RS, Kost-Byerly S, Wetzel R, Billett C, Lebet RM, Yaster M. The safety and efficacy of parent-/nurse-controlled analgesia in patients less than six years of age. Anesth Analg 2000; 91:573-579.

Motamed, C. (2022). Clinical update on patient-controlled analgesia for acute postoperative pain. *Pharmacy, 10*(1), 22.

Pasero, C., McCaffery, M. (2011). Pain Assessment and Pharmacologic Management. Chapter 17- Intravenous Patient Controlled Analgesia. p.462-472 Mosby, Elsevier.

Sharp, D., & Jaffrani, A. (2021). A PRISMA systematic review on the safety an efficacy of patient-controlled analgesia (PCA) in pediatrics. *Journal of Pediatric Nursing, 61*, 219-223.

Twycross, A., Stinson, J., Zempsky, W. T., & Jordan, A. (2024). *Managing Pain in Children and Young People: A Clinical Guide*. John Wiley & Sons.

Attachments:

PCA learning package 2025.pdf

AboutKidsHealth Patient-controlled and nurse-controlled analgesia