EPIDURAL CATHETER: CONTINUOUS INFUSION – ICU

PURPOSE:

To outline the management of the patient receiving analgesia via continuous epidural infusion.

SUPPORTIVE DATA:

The epidural catheter is a temporary catheter used for pain management. It is introduced into the epidural space and may remain in place for up to seven days. Epidural catheters and their protective, occlusive dressing are managed under the direction of a Department of Anesthesia provider or Pain Management Service. **NO OTHER** PROVIDER OR NURSE SHOULD ACTIVATE OR MANIPULATE THE CATHETER. Only a provider from the Department of Anesthesia or Pain Management Service may write orders for epidural pain medication.

Opioid analgesics may be infused alone or in combination with a local anesthetic for synergistic effect. Opioids that are given via this route include: Morphine, Meperidine (Demerol), Hydromorphone (Dilaudid), and Fentanyl. The duration and extent of analgesia is dependent on the volume, concentration and type of medication as well as the level of catheter placement.

This standard does not apply to the obstetric patient.

ASSESSMENT, ADMINISTRATION, TROUBLESHOOTING:

1. Verify provider's order and epidural pump settings with second RN, using an *independent double-check process*, prior to administration, with any change in bag/syringe/concentration/dosage/setting, and at the beginning of every shift with the following steps:
   - View the provider's order at the bedside in the presence of the patient and pump
   - Program the pump using the provider's order
   - Verify correct pump settings prior to administration including:
     - Name of medication
     - Medication concentration
     - Rate of infusion
     - Dose and frequency of boluses

   Note: The nurse may take a verbal order (from a provider from the Department of Anesthesia Pain Management Service) for dose changes only. The verbal order must specify the formulation (e.g. standard or reduced).
2. Assess **upon initiation** and with **each dose change** the following **q 15 minutes x 2**, then **q hour x 4**, then **q 2 hours**:
   - Level of consciousness (LOC)
   - Blood Pressure (BP)
   - Heart Rate (HR)
   - Respiratory Rate (RR) (done **every hour** throughout epidural infusion)
   - Oxygen saturation
   - Depth of respiration
   - Pain level
   - Level of sedation [Richmond Agitation Assessment Scale (RASS)]
3. Assess for side effects a minimum of every 4 hours:
   - Confusion
   - Itching
   - Nausea/vomiting
   - Urinary retention (if no indwelling bladder catheter)
   - Edema

4. Assess for the following a minimum of every 4 hours:
   - Motor ability (able to move all extremities) and sensation to lower extremities (tingling/numbness in legs)
   - Epidural site for signs of leakage/dislodgement/infection
5. Assess for constipation a minimum of every shift.
6. Assess orthostatic (postural) blood pressure prior to ambulation.
7. Assess for and document accuracy of pump settings, frequency of patient use of epidural (for patient-controlled dosing), and clear pump every 4 hours.
8. Assess coagulation labs as drawn

SAFETY:

9. Ensure the following:
   - Two RNs verify and document that provider's order matches drug concentration and pump settings at the beginning of the shift and with every change in bag/bottle/concentration/dosages
   - Patent intravenous access
   - Catheter, dressing, antibacterial filter and tubing connections are secure
   - Bag-valve-mask device and oxygen source at bedside and during transport
   - Naloxone immediately available
10. Follow the epidural line from the bag to the patient at the beginning of the shift.
11. Do not interrupt infusion (except for reportable conditions as described in item #20 or as ordered by the provider).
12. Use only epidural analgesic infusion pump and epidural infusion set without injection ports.
13. Label catheter and pump with "EPIDURAL" label.
14. Maintain IV access during epidural therapy and for 24 hours after epidural is discontinued.

PATIENT TRANSFER:

15. Transfer the patient out of the ICU when **BOTH** of the following criteria are met:
   - **ONLY** after epidural catheter is removed
   - The patient has no epidural catheter-related neurologic complications

16. Ensure that report to receiving unit includes the need for close monitoring of:
   - Urine output
   - Epidural site

REPORTABLE CONDITIONS:

17. Discontinue infusion, notify primary provider and Anesthesia/Pain Management Service immediately for the following:
   - Inability to arouse patient (give Naloxone as ordered)
   - RR less than 10 per minute/severe respiratory depression (give Naloxone as ordered)
   - Respiratory distress
   - Signs of allergic reaction/anaphylaxis, e.g. edema, stridor

18. Notify primary provider and Anesthesia/Pain Management Service for the following

   - Altered mental status/excessive sedation
   - Tingling, numbness of lower extremities
   - Inability to move lower extremities
   - Inadequate analgesia (verify patency of epidural infusion)
   - Dislodgement of occlusive dressing or antibacterial filter
   - Signs/symptoms (S/S) of catheter site infection/abscess/hematoma
   - S/S of meningitis
   - HR less than 50/minute or a decrease by 20/minute from baseline
   - Blood pressure with significant change from baseline
   - Intractable nausea and vomiting for more than 30 minutes, unresponsive to antiemetic medications

- Itching not responsive to ordered medications
- Temperature greater than 38.5 degrees Celsius

19. Discuss with provider the need to hold antithrombotics prior to epidural catheter insertion or discontinuation.
20. Do the following **immediately** if a significant event in relation to the epidural pump occurs:
    - Discontinue pump from patient, but leave plugged in and turned on
    - Notify Supervisor
    - Complete Safety Intelligence (SI) report
    - Call Bio-Med to evaluate pump. Indicate on pump type of malfunction, date, time Bio-Med called.
        - During off-shifts or when Bio-Med is not available the charge nurse or Supervisor will sequester the pump in a secure location
    - Clamp tubing, place in zip-lock bag and hand deliver medication to pharmacy

PATIENT/CAREGIVER EDUCATION:

21. Instruct on the following:
    - Purpose of epidural infusion
    - Need to report:
        - Disruption of catheter or dressing
        - S/S of adverse reactions
        - Inadequate pain relief

STANDARDS/ PROCEDURES:

22. Refer to the following as indicated:
    - Artificial Airway
    - Oxygen Therapy
    - Bladder Scanning Nursing Standardized Procedure
    - Bladder Scan Procedure

DOCUMENTATION:

23. Document in accordance with documentation standards.
24. Both RNs document medication verification.
25. Document in the following sections in the ICU Lines-Devices Navigator band:
    - Epidural assessment
    - Epidural settings
    - Epidural line care
    - Epidural education

Opioid / Analgesic	Onset of Action	Duration of Action
Morphine	30-60 minutes	8-24 hours
Meperidine (Demerol)	20 minutes	4-6 hours
Hydromorphone (Dilaudid)	15-30 minutes	4-5 hours
Fentanyl	7-15 minutes	2-4 hours

Initial date approved: 11/94	Reviewed and approved by: Department of Anesthesia Professional Practice Committee Pharmacy & Therapeutic Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: 09/98, 04/01, 01/04, 10/05, 10/10, 3/15, 10/15, 9/20

REFERENCES

- Lawless, S.J. (2011) Epidural catheters: Assisting with insertion and pain management. In Wiegand, D, L.M. . (Ed.), *AACN Procedure Manual for Critical Care*, 6th Ed. St Louis Missouri.
- Consult: LAC+USC Pain Nursing Specialist
- Consult: LAC+USC Department of Pharmacy
- LAC+USC Adult Epidural Infusion Orders (2008)