ACUTE PAIN SERVICE

PROCEDURE

CATEGORY: System-Level Clinical
ISSUE DATE: May 2004 **REVISION DATE:** January 2018
SUBJECT: **EPIDURAL/PARAVERTEBRAL ANALGESIA**

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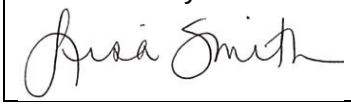
Approval: Lisa Smith, Executive Sponsor Clinical Policy and Procedures Committee 	**Date:** February 7, 2018

PURPOSE

To ensure the proper administration of narcotics and/or local anesthetic agents via an epidural/paravertebral catheter for Acute Pain Service and Palliative Care area patients.

PROCEDURE

Equipment

- Masks
- Sterile gloves for physician
- Epidural catheter and insertion tray
- 1% and 2% lidocaine without epinephrine
- Chlorhexidine 2% in 70% alcohol
- Steri-strips
- Paper tape
- Tegaderm
- Alcohol swabs

Special Instructions

- This is an advanced nursing skill for specially trained Registered Nurses in designated areas (Critical Care Areas, PACU, General Surgery and Vascular Thoracic Urology).
- The Department of Anesthesiology is responsible for the Epidural/Paravertebral Analgesia Program. This includes:
    - Insertion and labelling of the epidural/paravertebral catheter
    - Administration of the initial dose
    - Prescribing all medications for analgesia and related medications
    - Provision of 24 hour coverage for problems/concerns
- ANTI-COAGULANTS AND PLATELET INHIBITORS SHOULD NOT BE ADMINISTERED WHILE AN EPIDURAL/PARAVERTEBRAL CATHETER IS IN SITU. Exceptions include the following anticoagulants for VTE prophylaxis:

  - Enoxaparin (Lovenox) at a maximum dose of 40 mg subQ once daily to be administered at 1000 hours
  - Heparin 5000 units subQ Q12H
  - ASA at a maximum dose of 325 mg/day
- If any anti-coagulant or platelet inhibitor (Warfarin (Coumadin), Clopidogrel (Plavix), Fondaparinux, etc.) is ordered by a physician, surgeon or intensivist, the Acute Pain Service (or anesthesiologist on-call) must be notified prior to the administration. All efforts will be made to remove the catheter prior to administering this medication top reduce the risk of an epidural hematoma.

See Appendix A for Epidural Catheters
See Appendix B for Paravertebral Catheters
See Appendix C for Pasero Opioid-Induced Sedation Scale (POSS) with Interventions
See Appendix D for Guidelines for Neuraxial Anesthesia in Patients Receiving Anticoagulation

EDUCATION AND TRAINING

Definitions

1. Epidural Hematoma: Symptomatic bleeding within the spinal neuraxis. Signs and symptoms of epidural hematoma may include back pain, tingling, numbness and/or weakness of lower extremities.

Education/Training Related Information

To obtain special certification in epidural analgesia, the registered nurse must:

- Review the "Epidural Analgesia" self-learning package and complete the related test with a grade of 80% or more.
- Complete a successful demonstration of skills to the nurse clinician or delegate relating to epidural analgesia including assisting with insertion, setup, monitoring and maintaining an epidural infusion and removal of an epidural catheter.

References and Related Documents

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APPENDIX A

Epidural Catheters

Equipment

Removal	Capping
• Band-Aid • Clean gloves	• Sterile dead end cap

Special Instructions

- Epidural catheters are considered hazardous waste. Universal precautions are warranted.
- The removal of an epidural/paravertebral catheter may be performed by a certified RN.
- If the patient is being anticoagulated, the certified RN will perform the catheter removal procedure as per orders written by the Acute Pain Service. **(Appendix D)**
- Epidural insertion sites are NOT to be cleansed with alcohol-based solutions, as these are toxic to nerve fibers. If the area must be cleansed, use sterile normal saline only.

Insertion

1. Arrange the patient in a sitting position with the spine flexed or a lateral decubitus position (physician's choice).
2. Assist the physician as required.
3. After the physician applies the occlusive dressing, secure the edges of the occlusive dressing with paper tape, then secure the rest of the catheter with paper tape. Place a gauze square under the filter to prevent pressure on the patient's skin and secure with steri-strips or tape.
4. Use alcohol swabs to secure the paper tape edges to the skin.

Continuous Infusion

1. An independent double check of the medication is required prior to hanging the solution (refer to *Independent Double Check of Medications*).
2. Spike the epidural tubing into the infusion solution.
3. Insert the tubing cassette into the pump and follow the pump guidelines to purge the air.
4. Obtain baseline vitals (BP, P, R), pain score and level of consciousness.
5. Set the rate of infusion and start the pump.
6. Monitor:
   A. Sensory block level and motor block level Q4H and PRN x 24 hours, then Q12H and PRN for the duration of the infusion.
   B. Urine output a minimum of Q6H in patients who are not catheterized.
   C. After the start of the infusion, and an increase in infusion rate greater than 4 mL/h: vital sign protocol (BP, P, R), level of consciousness and pain score Q 30 minutes x 1 hour, Q1H x 2 hours, then Q2H x 4 hours, and Q4H thereafter for the duration of the infusion.
   D. For an increase in infusion rate less than 4 mL/h: BP and pain score Q1H x 2, then Q4H.
7. If any of the following occur, **STOP** the infusion, restart monitoring for vital signs and call the Acute Pain Service or Anesthesia 1st Call:
   A. SBP less than the level noted on the infusion orders
   B. Sensory block level above the level noted on the infusion orders
   C. Signs of local anesthetic toxicity (lightheadedness, numbness of tongue, tinnitus, visual disturbances, muscle twitching, drowsiness, seizures)
   D. Motor block
   E. If the respiratory rate is less than 8 or sedation scale greater than 2, follow **Appendix A**.
8. If the infusion is not controlling the pain, notify the Acute Pain Service or Anesthesia 1st Call.

9. Check the insertion site daily for blood, fluid, swelling or drainage. If unable to inspect the insertion site due to a non-transparent occlusive dressing, do not attempt to remove the dressing.
10. Perform an independent double check (refer to *Independent Double Check of Medications*) with every solution and rate change.

Removal

1. Explain the procedure to the patient.
2. Check baseline neurovascular and vital signs.
3. Position the patient either sitting or side-lying with the back arched out.
4. Remove the dressing while supporting the catheter.
5. With your gloved hand, grasp the catheter close to the skin and remove it slowly with a steady, constant pull. **DO NOT** apply extreme force during removal. If resistance is met or the patient experiences pain during the removal, **STOP**, replace the dressing and call the Acute Pain Service or Anesthesia 1st Call.
6. After removing the catheter, ensure presence of the black tip. The black tip indicates that the entire catheter has been removed from the epidural space. If the tip appears to be missing, save the catheter and notify the Acute Pain Service.
7. Observe for presence or absence of a blood clot at the tip of the catheter. Notify the Acute Pain Service if a blood clot is present at the tip of the catheter.
8. Assess the site for signs of infection.
9. Cover the puncture site with a Band-Aid.
10. Document the time of removal, whether or not the catheter is intact, appearance of site and patient tolerance.
11. Monitor the patient for signs and symptoms of epidural hematoma formation x 8 hours post-epidural removal. Should any of these occur, notify the Acute Pain Service or Anesthesia 1st Call.
12. Alternative analgesia can be given immediately after removal or discontinuation of epidural analgesia.

Capping

1. Obtain an order from the Acute Pain Service to cap off the epidural catheter.
2. Turn off the pump and clamp the tubing.
3. Maintaining sterile technique, disconnect the tubing from the catheter and attach the sterile dead end cap to the epidural catheter end.
4. Ensure the catheter is securely taped to the patient so it does not dislodge.

APPENDIX B

Paravertebral Catheters

Equipment

Insertion	Capping
• Continuous Peripheral Nerve Block pump tubing • 22 micron filter • Preservative-free infusion solution prepared and dispensed by Pharmacy • Designated pump for paravertebral infusion	• Sterile dead end cap

Special Instructions

- A surgeon may insert the paravertebral catheter during a surgical procedure, as the paravertebral space can be directly viewed and the catheter placed in the desired area.
- An established IV or access device must be in situ during therapy and 4 hours post removal.
- Oxygen, suction and Naloxone (Narcan) must be immediately available at the bedside.
- Do not administer any other narcotics/sedatives unless ordered by the Department of Anesthesia or ICU.
- Dressings are not to be changed unless ordered by the Acute Pain Service.
- As per the practice advisory for the prevention, diagnosis and management of infectious complications with neuraxial techniques, all efforts will be taken to limit the disconnection and reconnection of the delivery system.
    - Solution bags will only be changed when empty or when the anesthesiologist orders a change in the solution
    - Tubing will only be changed when the anesthesiologist orders a change in the solution (not to be changed routinely Q96H)

Continuous Infusion

1. An independent double check of the medication is required prior to hanging the solution (refer to *Independent Double Check of Medications*).
2. Spike the paravertebral tubing into the infusion solution.
3. Insert the tubing cassette into the pump and follow the pump guidelines to purge the air.
4. Obtain baseline vitals (BP, P, R), pain score and level of consciousness.
5. Set the rate of infusion and start the pump.
6. Monitor:
    A. Sensory block level and motor block level Q4H and PRN x 24 hours, then Q12H and PRN for the duration of the infusion.
    B. Urine output a minimum of Q6H in patients who are not catheterized.
    C. After the start of the infusion, and an increase in infusion rate greater than 4 mL/h: vital sign protocol (BP, P, R), level of consciousness and pain score Q 30 minutes x 1 hour, Q1H x 2 hours, then Q2H x 4 hours, and Q4H thereafter for the duration of the infusion.
    D. For an increase in infusion rate less than 4 mL/h: BP and pain score Q1H x 2, then Q4H.
7. If any of the following occur, **STOP** the infusion, restart monitoring for vital signs and call the Acute Pain Service or Anesthesia 1st Call:
    A. SBP less than the level noted on the infusion orders
    B. Sensory block level above the level noted on the infusion orders
    C. Signs of local anesthetic toxicity (light headedness, numbness of tongue, tinnitus, visual disturbances, muscle twitching, drowsiness, seizures)
    D. Motor block

E. If the respiratory rate is less than 8 or sedation scale greater than 2, follow **Appendix A**.

8. If the infusion is not controlling the pain, notify the Acute Pain Service or Anesthesia 1st Call.
9. Check the insertion site daily for blood, fluid, swelling or drainage. If unable to inspect the insertion site due to a non-transparent occlusive dressing, do not attempt to remove the dressing.
10. Perform an independent double check (refer to *Independent Double Check of Medications*) with every solution and rate change.

Removal

1. Explain the procedure to the patient.
2. Position the patient in a comfortable positon (sitting up).
3. Remove the dressing while supporting the catheter.
4. With your gloved hand, grasp the catheter close to the skin and remove it slowly with a steady, constant pull. **DO NOT** apply extreme force during removal. If resistance is met or the patient experiences pain during the removal, **STOP**, replace the dressing and call the Acute Pain Service or Anesthesia 1st Call.
5. After removing the catheter, ensure presence of the black tip. The black tip indicates that the entire catheter has been removed from the epidural space. If the tip appears to be missing, save the catheter and notify the Acute Pain Service.
6. Observe for presence or absence of a blood clot at the tip of the catheter. Notify the Acute Pain Service if a blood clot is present at the tip of the catheter.
7. Assess the site for signs of infection.
8. Cover the puncture site with a Band-Aid.
9. Document the time of removal, whether or not the catheter is intact, appearance of site and patient tolerance.
10. Alternative analgesia can be given immediately after removal or discontinuation of epidural analgesia.

Capping

1. Obtain an order from the Acute Pain Service to cap off the paravertebral catheter.
2. Turn off the pump and clamp the tubing.
3. Maintaining sterile technique, disconnect the tubing from the catheter and attach the sterile dead end cap to the paravertebral catheter end.
4. Ensure the catheter is securely taped to the patient so it does not dislodge.

APPENDIX C

Pasero Opioid-Induced Sedation Scale (POSS) With Interventions

Sedation Scale	Interventions
S = Sleeping, easy to rouse	Acceptable, no action necessary, may increase opioid dose if needed
1 = Awake and alert	Acceptable, no action necessary, may increase opioid dose if needed
2 = Slightly drowsy, easily roused	Acceptable, no action necessary, may increase opioid dose if needed
3 = Frequently drowsy, rousable, drifts off to sleep during conversation	Unacceptable. Monitor respiratory status and sedation level closely until sedation level is stable at less than 3 and respiratory status is satisfactory. Notify the Acute Pain Service or physician responsible to decrease opioid dose. Consider administering a non-sedating, opioid-sparing non-opioid such as Acetaminophen or an NSAID.
4 = Somnolent, minimal or no response to verbal or physical stimulation	Unacceptable. Stop opioid. Consider administering Naloxone*. Stay with the patient, stimulate and support respiration as indicated by the patient's status. Notify the Acute Pain Service or physician responsible. Call CCRT or Code Blue if indicated. Monitor respiratory status and sedation level closely until sedation level is stable at less than 3 and respiratory status is satisfactory.

*For adults experiencing respiratory depression:

1. Mix 0.4 mg of Naloxone with 9 mL of Normal Saline (0.4 mg/10 mL).
2. Administer 2.5 mL over 1 minute.
3. Flush with 10 mL of Normal Saline.
4. Repeat until desired effect is achieved (max 0.4 mg).

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APPENDIX D

Guidelines for Neuraxial Anesthesia in Patients Receiving Anticoagulation

Anticoagulant	Minimum time interval between last dose of anti-coagulant and spinal injection or epidural catheter placement	Use of anti-coagulant in patient with indwelling epidural catheter	Minimum time interval between last dose of anticoagulant and removal of epidural catheter	Minimum time interval between spinal injection or catheter placement / removal and next dose of anticoagulant
Apixiban	3 days	Contraindicated	Not applicable	6 hours
Aspirin and NSAIDs	No contraindication unless on concurrent anti-platelet agents or anti-coagulants	No contraindication unless on concurrent anti-platelet agents or anti-coagulants	No contraindication	No contraindication
Clopidogrel (Plavix)	7-10 days	Contraindicated	Not applicable	6 hours
Dabigatran (Pradaxa)	Normal renal function: hold 4 doses Moderate renal impairment: hold 6-8 doses	Contraindicated	Not applicable	6 hours
Heparin (subQ) – Prophylaxis adult dose (5,000 units subQ BID or TID)	4-6 hours	No contraindication	4-6 hours	2 hours if no insertion complications or bloody tap
Heparin (sc) – Full dose (greater than 5,000 units subQ BID or TID)	When aPTT normal	Contraindicated	Not applicable	2 hours if no insertion complications or bloody tap
Heparin Infusion – Full dose	When aPTT normal	Contraindicated	Stop Heparin infusion	2 hours if no insertion complications or bloody tap
Low Molecular Weight Heparin – Prophylaxis dose	Preferably 24 hours (minimum 12 hours) if renal function normal	No contraindication	Preferably 24 hours (minimum 12 hours) if renal function normal	4 hours if no insertion complications or bloody tap
Low Molecular Weight Heparin – Full dose	Contraindication	Not applicable	Not applicable. If epidural in situ, must wait 24 hours from previous dose prior to removal and wait 2 hours after removal before administration of next dose.	
Prasugrel (Effient)	7-10 days	Contraindicated	Not applicable	6 hours
Rivaroxaban (Xarelto)	3 days	Contraindicated	Not applicable	6 hours
Ticagrelor (Brilinta)	5-7 days	Contraindicated	Not applicable	6 hours
Ticlopidine (Ticlid)	14 days	Contraindicated	Not applicable	6 hours
Tinzaparin (Innohep)	10-12 hours	No contraindication	10-12 hours	2 hours
Warfarin	INR less than or equal to 1.3	Contraindicated	INR less than or equal to 1.3	2 hours