



NURSING POLICY, PROCEDURE, PROTOCOL MANUAL

Pain (Acute): Epidural (Infusions or Patient Controlled Epidural Analgesia)

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APPROVED BY:	(Chief of Nursing)		

POLICY STATEMENT:

Acute Pain Service (APS) patients are admitted to units where the frequency of exposure to epidural analgesia support the skill and competence of the Registered Nurse (RN), and where there may be more predictable outcomes for the APS patients.

The RN must demonstrate competency in knowledge and skills required for care of a patient on the Acute Pain Service. The RN must complete the initial education program.

The APS Epidural Analgesia order form will be used to prescribe the medication name, route, concentration, infusion, dose, lockout and maximum number of boluses per hour. A new APS order form (either IV PCA, Epidural or Regional Analgesia) will be initiated for each new drug or route change. A medical order is required for any changes to the initial parameters.

The patient is not to receive additional opioids, sedatives, antiemetics, non-steroid anti-inflammatory (NSAID) or central nervous system depressants (CNS) ordered by the attending service (with exception to medications used for weaning), until discharged from the APS, unless discussed and approved by APS. The exception to this is the Intensive Care Unit (ICU), (ICU), Post Anesthetic Care Unit (PACU).

Follow the APS guideline for titration of epidural infusions and weaning epidural analgesia.

Follow the APS guideline for removal of an epidural if the patient is receiving anticoagulant therapy.

If a heparin infusion or warfain therapy is to be initiated on a patient with an epidural, immediately notify APS, e.g. before the medication is given.

The registered nurse (RN) will ensure safe infusion of medication for pain management as per policy NSG-2-100.

Only non-dextrose, preservative-free solutions/medications will be used.

Only the APS anaesthesiologist or resident may administer medication (direct push) into the epidural catheter for the purpose of evaluation of epidural catheter placement or inadequate analgesia.

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Patients receiving epidural analgesia will be assessed as outlined in the APS Assessment Guideline. Assess epidural catheter and catheter site for kinking or shearing, leakage, redness, swelling, and palpate for bony tenderness q 12 hours.

Stop infusion and notify APS stat:

- i. If level of sedation (LOS) > 2 and respiratory rate (RR) < 8, Implement the APS Clinical Guideline for Naloxone Administration. Ensure APS is notified of Naloxone administration.
- ii. If sudden onset of hypotension; drop in BP > 30 mmHg from pre-epidural baseline, motor block > 0 or sensory block > 4 dermatomes from epidural catheter

Notify APS of

- i. new onset restlessness, jitters, metallic taste, reported ringing in ears, radiating pain, paralysis, and /or bony tenderness with or without localized back pain
- ii. persistent pain, nausea, pruritis, or motor block unrelieved by interventions.

In the event of a critical event and/or malfunction of the pump, secure the pump on the clinical unit and notify the APS. Leave pump plugged in, do not clear information on the pump.

DEFINITIONS:

Acute Pain Service

The acute pain service (APS) consists of Anesthesiologists, an Advanced Practice Nurse (APN) and Nurse Specialist (s) to support quality, safe and ethical patient care for perioperative analgesia in the obstetrical, surgical and trauma population.

Epidural Analgesia

This is the administration of analgesics into the epidural space. Opioids diffuse from the epidural space across the dura, through the cerebral spinal fluid (CSF) to the receptors in dorsal horn of spinal cord. Local anesthetics mechanism of action is primarily directly on neuronal axons in the epidural space and within neurons. Where possible, epidural catheter location should be no lower than the dermatome innervating the middle of the incision.

When local anesthetics are used in the epidural, there is no patient controlled epidural analgesia (PCEA) modality. An epidural infusion modality is used alone. Titration of the infusion by the nurse is used to facilitate adequate pain control.

PCEA may be used when epidural opioids are used alone.

PCA Pump

This is a drug delivery pump that delivers a dose of medication as an infusion and/or allows patients to self-administer a dose of medication at specific time intervals.

PCEA

Patient Controlled Epidural Analgesia (PCEA) is administration of medication by the patient using a handset to deliver prescribed doses of medication as required by the patient.



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NCB

Nurse Controlled Bolus (NCB) is administration of medication by the registered nurse and indicated when the patient is cognitively or physically unable to use the handset, or as indicated for epidural infusions. The physician orders the dose.

Infusion

Medication is delivered at a continuous prescribed rate. Also referred to as basal or continuous rate.

Dose

The prescribed amount of medication the patient will receive.

Delay

The time interval (minutes) between doses administered.

Injections

The number of times the patient presses the handset and receives medication.

Attempts

The total number of times the patient presses the handset.

Respiratory Depression

Respiratory depression is defined as reduced respiratory rate and/or a decrease in depth of inspiration, from baseline accompanied by mental clouding and somnolence.

The guideline for Naloxone administration is a clinical guideline for the initial management of opioid induced respiratory depression in the postoperative setting. It also serves to emphasize the need to consider differential diagnosis of decreased SpO₂ and increased sedation in patients receiving acute pain management. It provides clear indications for naloxone and guidelines for nurses to administer naloxone in the event a physician is not available.

Adequate Analgesia

Pain score of $\leq 3/10$ rest; $\leq 5/10$ activity. The patient is able to rest comfortably, progress with their activity and achieve their pain management goal.

NURSING ALERTS:

1. Ensure the availability of Naloxone (Narcan) 0.4 mg/ml ampoules on all clinical units.
2. Ensure the availability of resuscitation equipment in the clinical area.
3. Ensure IV access for the duration of the epidural catheter.
4. Refer to reverse side of APS order form for the usual dosage of opioids, anti-emetic and anti-pruritic protocols.
5. Risk of epidural catheter related infection increases after 3 days. Discuss the need for continued epidural analgesia with APS.
6. Ensure the integrity of the dressing over epidural catheter site. Change the dressing using aseptic technique, if no longer occlusive or wet and q 6 days if catheter remains in place. Use normal saline as cleansing solution.



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7. Ensure patient understands rationale and use of “patient controlled” vs “nurse controlled”. If PCA, assess cognitive and physical function. If patient demonstrates difficulty using PCA, ascertain need for continuous infusion and/or nurse - controlled bolus and obtain order from APS. Remove handset from patient.
8. Assess pain intensity; using 0 to 10 verbal analogue scale (VAS), in the patients preferred language. Refer to the Pain Resource manual located on each clinical unit.
9. Consider using the patient self - assessment Brief Pain Inventory (BPI) with patients screened for pre-existing pain when information about patient’s pain over past 24 hours is required and/or to evaluate effect of interventions. Refer to the Pain Resource manual.
10. Not all patients receiving epidural analgesia require an indwelling bladder catheter. The decision to place or remove an indwelling bladder catheter should take into account the patient’s medical, surgical and epidural related risks of urinary retention. Consider placement of an indwelling bladder catheter when epidural analgesia is:
 - administered below L1 and expected to last > 6 hours
 - motor block of the legs is expected
 - sensory block below L3 is expected

The surgeon need not delay the order to remove an indwelling bladder catheter on account of the patient receiving continuous epidural analgesia provided that there is no clinical evidence or expected impairment of spinal nerve roots S2, S3 and S4.

EQUIPMENT:

Baxter I Pump (available from logistical services or PACU) Refer to written information for set-up
250 ml bag with medication (prepared by pharmacy)

Epidural Pump Set tubing for 500 ml bag cover

Tongue depressor and latex free tape

Ice cube in glove or vial access cannula (for sensory level assessment)

For Removal

non sterile gloves

bandaid PRN

If infection suspected

Sterile gloves

Normal saline

Sterile swab C& S

Chlorhexidine 2% swab stick #230865

For catheter – connector disconnect

Sterile gloves

Sterile gauze 10cmx10cm (3)

Chlorhexidine 2 % swab stick (without alcohol) #230865

Sterile scissors

Sterile epidural connector # 120795



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PROCEDURE:

Initiation and Maintenance

1. Connect medication bag to epidural set tubing and manually prime tubing.
2. Secure medication bag in pump and thread tubing.
3. Establish pump parameters as ordered. Refer to written information to program pump as necessary.
4. Two RN's must independently verify patient's name on the armband, medication (type, concentration and dose), and the pump settings against the physician's order or documentation record as applicable:
 - i. Prior to initiating the infusion
 - ii. Prior to discharge from ICU and PACU
 - iii. At beginning of shift (exception: 1 RN required)
 - iv. If there is a change in medication type, concentration of medication, dose settings, or infusion settings (exception: 1 RN required for dose and infusion adjustments in PACU, ICU)
 - v. Obtaining a new bag
5. Connect epidural tubing to epidural catheter. Start infusion.
6. Secure epidural catheter onto a tongue depressor and secure onto patients gown. Ensure an "Epidural" label is placed on the catheter
7. Follow the APS assessment guideline
8. Titrate dosage as per the APS Epidural infusions increasing and decreasing guidelines.
9. Discontinue epidural as per the APS weaning guideline for Epidural infusions or PCEA. When discontinued, write "D/C APS as per guideline" on the physician order form.
10. Resume orders written by attending service for opioids, sedatives, antiemetics, NSAID's and/or CNS depressants when epidural is discontinued.
11. Record medication solution obtained and wasted on Narcotic and Controlled Drug record to TOH procedure.
12. Store the pump in the soiled utility room for transport back to Logistical Services. Open battery door and flip battery. Leave door open.

Epidural Catheter Disconnect

1. Clean hands. Put on sterile gloves.
2. Pick up epidural catheter with sterile gauze and using aseptic technique, cleanse the catheter (10cm) proximal to the disconnect with a chlorhexidine swab stick. Let dry.
3. Cut catheter 2 cm from end with sterile scissors.
4. Insert epidural catheter into new connector and tighten. Place catheter/connector on new sterile gauze.
5. Pick up old connector with sterile gauze and cleanse the junction between the epidural connector and epidural tubing. Let dry.
6. Hold epidural tubing with another sterile gauze and remove epidural connector from epidural tubing and discard.
7. Connect the epidural tubing to the new epidural connector.
8. Secure catheter and connector onto a tongue depressor and secure onto patients gown.



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Epidural Catheter Removal

1. Follow the APS guidelines for removal of an epidural if the patient is receiving anticoagulant therapy.
2. Turn off infusion pump, if applicable.
3. Position patient with spine flexed either side- lying or sitting. Widening of vertebral spaces facilitates catheter removal.
4. Clean hands. Glove.
5. Remove tape and dressing and inspect site. If evidence of drainage:
 - a. Put on sterile gloves.
 - b. Cleanse with N/S before swabbing, if presence of old drainage, crust
 - c. Try to culture fresh new drainage by expressing fluid. Obtain swab for culture and sensitivity regardless of presence of expressed drainage.
 - d. Cleanse with chlorhexidine 2 % and let dry.
6. Remove catheter steadily. Slight resistance usual. If moderate resistance, assist patient to flex spine more and re-attempt catheter removal. If resistance continues, stop, cover site and notify APS.
7. Apply bandaid over the site once catheter is removed.
8. Observe for radiopaque point at the tip of the catheter. Notify APS if not intact. A Health care incident report must be completed if catheter tip is not intact.
9. Remove bandaid after 24 hours.

PROTOCOL:

Clinical Guidelines:

Naloxone Administration - Appendix 1

Epidural (PCEA) Weaning - Appendix 2

Epidural Increasing - Appendix 3

Epidural Decreasing - Appendix 4

Epidural Infusion Weaning -Appendix 5

APS Assessment Guideline - Epidural Analgesia

PAIN	Verbal Analogue Scale (VAS) 0 – No Pain 10 – Worst pain Assess Rest and Activity Is pain preventing movement? Yes No Are you satisfied with pain control? Yes No	Frequency VAS q1h x 4hours; then q4h while awake q4h while awake
LOS & RR	Level of Sedation 0 None: Fully awake, alert 1 Mild: occasionally drowsy, easily aroused 2 Moderate: frequently drowsy; easily aroused, drifts off to sleep during conversation 3 Severe: Somnolent; difficult to arouse, minimal or no response to stimuli S Sleep: Normal sleep; easily aroused, RR> 10 and even, not shallow Respiratory rate, rhythm, depth	Frequency Q1h x 4 hours; q2h x 20 hours; then q 4h After 24 hours, may omit RR if LOS =0 If LOS ≥2, assess LOS & RR q1h



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Blood Pressure (if local anesthetic is used)	Blood Pressure	q 30 minutes x 2; q2h x 2; then q4h and prior to ambulation
Sensory (if local anesthetic is used)	Temperature Perception OR Sharp/Dull Perception. <ol style="list-style-type: none"> 1. Assess temperature perception using ice in glove <u>OR</u> assess sharp/dull perception using sharp object e.g. vial access cannula. 2. Establish normal cold perception at supraclavicular area by asking the patient "Is this cold" OR establish normal sharp perception at supraclavicular area by comparing your sharp object vs dull object (finger). 3. Assess cold perception or sharp/dull perception of dermatome at level of catheter. 4. Follow dermatome map and assess upper and lower dermatomes noting when either cold perception returns OR when sharp perception returns. 5. The upper limit of block is one dermatome below where perception returns. The lower limit of block is one dermatome above where perception returns. 6. Assess sensory block on both right and left side. 7. Document dermatome range. 	Frequency q 30 minutes x 2; q2h x 2; then q4h up to 24 hours; If stable after 24 hours; then q 12 h and PRN Increase frequency for new onset hypotension, changes in respiratory effort or inadequate analgesia to establish sensory level
Motor (if local anesthetic is used)	Bromage Scale Lower Limbs: 0 None: moves feet, knees, hips 1 Partial: moves feet and knees 2 Almost complete: moves feet only 3 Complete: does not move feet or knees Upper Limbs: 0 None: moves shoulder, arm, hand, fingers 1 Partial: moves arm, hands, fingers 2 Almost complete: moves fingers 3 Complete: does not move hands or fingers	Frequency q 30 minutes x 2; q2h x 2; then q4h while awake
Utilization	Dose amount, Injections, Attempts	Frequency Q4h

APS guidelines for epidural removal if patient receiving anticoagulant therapy

Unfractionated Heparin Infusion	Unfractionated Heparin Subcutaneous (Prophylaxis dose)	Low Molecular Weight Heparin (LMWH) (Prophylaxis dose)	Oral Warfarin
Notify APS for orders on removal as this is patient specific. Monitor motor/sensory x 24 hrs post removal <u>The following however is a usual recommendation as per ASRA:</u> Stop the heparin infusion for six hours, then remove catheter Restart heparin infusion 1 hour after catheter removed	Remove catheter 2 hrs before giving next dose	<u>Once Daily Dosing</u> Remove catheter 2 hours before giving next dose LMWH <u>Twice Daily Dosing</u> Notify APS for orders on removal as this is patient specific.	Notify APS for orders on removal as this is patient specific. <u>The following however is a usual recommendation as per ASRA:</u> Monitor INR daily and prior to anticipated catheter removal. Remove catheter when INR < 1.5. If INR ≥ 1.5, either discontinue warfarin dosing or consider reversal and re-check INR. When INR returns to < 1.5, remove catheter. Resume warfarin If the catheter was removed when the INR was > 1.5, continue to assess motor and sensory function for at least 48 hours



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DOCUMENTATION:

Document on the Pain Assessment and Medication Administration Record (MAR).

- medication route (concentration and dose), dosage adjustment (s), and bag change.
- verification check, date, time and signature of the second RN.
- assessments relative to the modality, interventions and side effects, catheter site
- removal, status of catheter, presence and color of drainage, and patient response

PATIENT TEACHING:

1. Ensure patient has written patient information
2. Instruct the patient on the use of the handset if PCA is ordered. Inform the patient not to press the handset if pain is well controlled and/or if patient experiences increased sedation. Ensure the patient understands that no one else is to use the handset. Inform the patient that the pump will be programmed to “lock out” for a period of time after the dose is delivered. Do not inform the patient that they cannot overdose themselves.
3. Advise the patient of the frequency of assessments including the pain intensity scale of 0 (no pain) to 10 (worst possible pain), blood pressure, sensory and motor.
4. Review with the patient the goal of the pain management therapy relative to their progressive recovery.
5. Instruct patient to notify nurse if experiencing side effects including increased difficulty with breathing or increased sedation, itching, rash, nausea, increased pain, restlessness, jitters, metallic taste, reported ringing in ears, pain or tenderness at epidural site or difficulty moving legs.

REFERENCES:

American Society of Regional Anesthesia and Pain Medicine Consensus Conference On Neuraxial Anesthesia And Anti-Coagulation May 2003

Guidelines for Acute Pain Management using Neuraxial Analgesia, Guidelines to the Practice of Anesthesia Canadian Anesthesia Society, 2003

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