Subject: Epidural Anesthesia/PCEA in Laboring Patients	
REVISION DATE: March 2013 REPLACES: L&D Epidural Anesthesia in Laboring Patients	WRITTEN: SUPERSEDES DATE:

This guideline is used to assist staff directly responsible for care of a laboring patient receiving epidural anesthesia for the purpose of pain reduction. This applies to all medical and nursing personnel.

Purpose: The goal of epidural anesthesia is to reduce or eliminate pain in the laboring patient.

Summary of Changes: References/content updated to reflect most current standards of practice.

1. References:

1.1. AWHONN, the Association of Women's Health, Obstetric and Neonatal Nurses (2012). Role of the registered nurse in the care of the pregnant woman receiving analgesia and anesthesia by catheter techniques. *Journal of Obstetric, Gynecologic, and Neonatal Nursing 41*(3), 455-457. Retrieved from, http://onlinelibrary.wiley.com/doi/10.1111/j.1552-6909.2012.01364.x/pdf.

1.2. American Society of Anesthesiologists (2007), Practice guidelines for obstetric anesthesia, an updated report by the American Society of Anesthesiologists task force on obstetric anesthesia. *Anesthesiology, 106*(4), 843-63.

1.3. Lippincott, Williams, & Wilkins (2012). Epidural anesthesia, care during labor. Retrieved from http://procedures.lww.com/lnp/view.do?pId=951147&s=p&fromSearch =true&searchQuery=epidural.

1.4. Lippincott, Williams, & Wilkins (2013). Epidural analgesic administration. Retrieved from http://procedures.lww.com/lnp/view.do?pId=951145&s=p&fromSearch=true&searchQuery=epidural.

1.5. Frank, B.J., Lane, C., and Hokanson, H. (2009). Designing a postepidural fall risk assessment score for the obstetric patient. *Journal of Nursing Care Quality, 24*(1), 50-54.

1.6. Association of Women's Health Obstetric and Neonatal Nurses (2010). Guidelines for professional registered nurse staffing for perinatal units. Washington, DC: AWHONN Staffing Task Force.

1.7. The American Society of Anesthesiologists, Inc. (2009). Postoperative Urinary Retention. Warner, D. and Warner, M (Eds.). *Anesthesiology110*, 1139-1157.

2. Responsibilities:

2.1. Credentialed delivering provider.

2.1.1. Manage and assume responsibility for patient care administered.

2.1.2. Assess patients requesting epidural anesthesia.

2.1.3 Review patient's medical history and lab values for possible contraindications.

2.1.4. Place appropriate epidural orders in Electronic Health Record.

2.1.5. Remain available in-house throughout the time the epidural is in place and functioning.

2.2. Anesthesia Provider.

2.2.1. Perform pre-anesthesia evaluation for possible contraindications to epidural placement.

2.2.2. Obtain informed consent including patient understanding of the procedure, indications, risks and benefits.

2.2.3. Place appropriate orders in Electronic Health Record and maintain anesthesia records.

2.2.4. Insert epidural catheter, administer test dose, loading dose, and continuous epidural infusion.

2.2.5. Respond to subsequent reports of elevated pain levels, assess patient, and administer bolus doses based on evaluation.

2.2.6. Monitor patient vital signs for 20 minutes after epidural placement.

2.2.7. Remain available in-house throughout the time the epidural is in place and functioning.

2.3 Nurse.

2.3.1. Educate patient on all available pain management options including benefits and risks associated with each.

2.3.2. Assess patient's pain level using techniques that are appropriate for the patient's age, condition, and ability to understand.

2.3.3. Alert medical provider and anesthesia provider upon patient's request for epidural placement.

2.3.4 Acknowledge and perform all patient orders in the EHR.

2.3.5. Assist anesthesia provider during epidural placement.

2.3.6. Monitor fetal heart rate and maternal vital signs and sedation level before, during, and after epidural placement and notify provider of abnormalities.

2.3.7. Assess for adverse side effects of epidural.

2.3.8 Monitor epidural infusion and assess maternal pain levels. Notify anesthesia if abnormalities noted.

2.3.9. Monitor for signs of infection including erythema, swelling or drainage at site, back pain, tenderness, fever, or neck stiffness.

2.3.10. Document epidural placement in the patient's electronic medical record (EHR).

3. General

3.1. Epidural analgesics are administered by the provider injecting a combination of local anesthetic and opioid analgesic in the epidural space, generally between L4 and L5. The medication diffuses into the subarachnoid space and is carried directly into the spinal area by cerebrospinal fluid, bypassing the blood-brain barrier (Lippincott, 2013).

3.2. Registered nurses may not administer bolus epidural medications, increase or decrease the rate of a continuous infusion epidural, or restart an epidural infusion once it has been stopped (AWHONN, 2012).

3.3. Registered nurses may pause the infusion to replace empty infusion bags and stop the infusion if there is a patient safety concern (AWHONN, 2012).

3.4. Patient should always have a peripheral IV catheter to allow immediate administration of emergency drugs.

3.5. Oral intake of moderate amounts of clear liquids may be allowed prior to epidural placement.

3.5.1. Patients with increased risk factors for aspiration or operative delivery (e.g. nonreassuring fetal heart rate patterns, TOLAC, obesity, or difficult airways) may need further restrictions (American Society of Anesthesiologists, 2007).

3.6. Solid foods should be avoided for 6-8 hours prior to epidural placement (American Society of Anesthesiologists, 2007).

3.7. Preparations containing alcohol or acetone should not be used for site preparation or disinfecting the catheter hub as they may cause neurotoxic effects (Lippincott, 2013).

3.8. Tubing should be changed every 48 hours and medication containers every 24 hours, routine dressing changes are not recommended (Lippincott, 2013).

3.9. Anesthesia staff and an obstetrician must be available in-house throughout the time the epidural is in place and functioning.

3.10. Current AAP and ACOG standards (1983-2007) require a 1:1 nurse-to-patient ratio for women receiving epidural anesthesia with continuous bedside attendance during the initiation of the epidural and until the condition is stable (at least 30 minutes after the initial dose) (AWHONN Staffing Guidelines, 2010).

4. Indications for Use.

4.1. It is the philosophy of this OB service that in the absence of medical contraindication, maternal request is a sufficient medical indication for pain relief during labor. Epidural anesthesia will be provided during labor and delivery per patient request as long as it can be safely administered by a member of the anesthesia staff and with the approval of the attending obstetrician.

5. Contraindications to Epidural Anesthesia and Possible Adverse Effects.

5.1. The patient's chart, lab values, and past medical history should be reviewed for possible contraindications such as local or systemic infection, coagulation abnormalities, history of back or spinal problems, neurological disease, hypotension, bleeding, anticoagulant therapy use, or allergies to the prescribed medications (Lippincott, 2013).

5.2. Possible adverse effects include: pruritus, nausea, urinary retention, hypotension, respiratory depression, infection, epidural hematoma, and catheter migration (Lippincott, 2013).

5.3. Changes in sedation level are an early indicator of respiratory depression.

5.3.1. Epidural drugs diffuse slowly and may cause adverse effects, including respiratory depression for up to 12 hours after the infusion has been stopped (Lippincott, 2013).

5.4. Postdural puncture headache can occur from accidental puncture of the dura during epidural insertion.

5.4.1. Notify anesthesia if patients report unrelieved headache that worsens with position changes after epidural placement.

5.4.2. Headache can be treated by injecting a blood patch of the patients own blood into the epidural space sealing off the leaking area.

5.5. Catheter migration occurs when the epidural catheter migrates out of the epidural space.

5.5.1. Migration towards the skin can lead to a reduction in pain relief. Monitor patient pain level and epidural insertion site and notify provider if migration is suspected.

5.5.2. Migration towards the subarachnoid space may eventually lead to toxicity in high concentrations. Monitor patient for increased sedation and decreased respirations. Notify the doctor immediately and discontinue the infusion (Lippincott, 2013).

5.6. Decreased motor sensation may decrease the patient's urge to void, resulting in bladder distention if not carefully monitored (Lippincott, 2013).

5.6.1. A urinary catheter will usually be inserted after epidural placement to drain the urine.

6. Standards of Practice/Guidelines for Care:

6.1. Alert the provider of patient's request for epidural placement and verify order.

6.2. Following a patient assessment by the provider, notify anesthesia of patient request for epidural placement.

6.3. If patient is not already on continuous fetal monitoring initiate at this time. Explain continuous monitoring and why it is needed to patient.

6.4. Gather the necessary equipment:

6.4.1. Anesthesia consent sheet and anesthesia flow sheet with correct patient labels.

6.4.2. Alaris Infusion Device with Alaris PCA channel attached

6.4.3. Obtain Alaris Infusion Device key from Medication Pyxis.

6.4.4. Epidural infusion tubing labeled, "PCEA Administration Set, Microbore Tubing with Yellow Identification Stripe, Anti-siphon Valve."

6.4.5. Two bags of 1,000 ml Lactated Ringers.

6.4.6. Appropriately sized blood pressure cuff and pulse oximeter.

6.4.7. Have on hand: oxygen setup, nasal cannula and non-rebreather mask for maternal oxygen delivery, IV naloxone, IV ephedrine, intubation and resuscitation equipment (available in the anesthesia cart).

6.5. Initiate bolus dose 1000mL Lactated Ringers for hydration prior to epidural placement, unless contraindicated by medical or obstetrical risk factors. A smaller bolus dose may be appropriate per patient condition and provider order (e.g. preeclampsia, elevated blood pressure or heart failure).

6.6. Accompany anesthesia provider to patient's room, verify and witness provider obtained informed consent.

6.7. Initiate continuous maternal pulse oximetry monitoring for initiation of epidural, to be continued throughout epidural infusion and up to 4 hours after it is discontinued (Lippincott, 2013).

6.8. Monitor blood pressure for baseline measurements, then every 2 minutes for 20 minutes after initiation of test dose and after any subsequent boluses given by anesthesia provider.

6.9. Perform a "time out" with the anesthesia provider before initiation of epidural placement. Verify patient identity, date of birth, and allergies using the patient's arm band and patient participation. Verify correct procedure, patient position, and that consent was obtained. Sign and verify the "time out" on the patient's consent sheet and document that the "time out" occurred in the patient's EHR.

6.10. Assist the patient to proper position as ordered by the anesthesia provider.

6.11. During epidural placement:

6.11.1. Assist patient to remain in proper position for epidural placement.

6.11.2. Monitor maternal vital signs, alert anesthesia provider to any abnormalities.

6.11.3. Monitor fetal heart rate. If abnormalities noted, stay with patient and alert provider.

6.11.4. Document time of epidural catheter placement, test dose, loading dose, and epidural pump start time.

6.12. Monitor blood pressure; if the patient's blood pressure falls by more than 30% of systolic pressure or 15% of diastolic pressure from baseline values prior to epidural placement:

6.12.1. Notify anesthesia and provider immediately.

6.12.2. Lower HOB and turn patient to left or right side to secure uterine displacement.

6.12.3. Begin an IV bolus of 500 ml Lactated Ringers.

6.12.4. Administer 02 via nonrebreather face mask at 10L/min.

6.12.5. Repeat blood pressure every 2 minutes until stable.

6.13. If the patient reports facial numbness or shows signs and symptoms of difficulty breathing, inability to talk, confusion or disorientation:

6.13.1. Do not leave patient bedside.

6.13.2. Turn off continuous epidural pump.

6.13.3. Raise the head of the bed.

6.13.4. Notify anesthesia and provider immediately.

6.13.5. Call rapid response

6.13.6. Prepare for possible ventilation

6.14. Assist anesthesia provider with initiation of continuous epidural infusion.

6.14.1. Per AWHONN's position statement, only "qualified credentialed licensed anesthesia care providers" should prepare and program the medication and infusion devices (AWONN, 2012, p. 457).

6.14.2. Confirm medication and pump rate with anesthesia. Trace tubing line to epidural site with anesthesia provider present in room to confirm correct placement.

6.14.3. Place "epidural" sticker on infusion pump and on tubing at connection sites.

6.14.4. Label tubing with appropriate sticker for tubing replacement in 48 hours. (e.g. if tubing initiated on Tuesday apply sticker stating, "Thursday") (Lippincott, 2013).

6.14.5. Scan patient's identification band and medication bar code to document medication administration in the EHR. Put the name of anesthesia provider starting the infusion in the section "Performed by".

6.14.6. Return the epidural key to the Medication Pyxis as soon as possible after initiation of epidural infusion.

6.15. After epidural placement:

6.15.1. Patient will be continuously observed (not left unattended) by the anesthetist for the first 20 min after initial dosing and any subsequent boluses.

6.15.2. Monitor and document maternal blood pressure every 2 min for 20 min after test dose and any subsequent boluses given by anesthesia provider, then every 15 min for the duration of the epidural. Notify provider of any abnormalities.

6.15.3. Continue continuous pulse and oxygen saturation monitoring for duration of epidural, Document every 15 min. Notify provider for persistent 02 saturation <95%.

6.15.4. Monitor and document maternal temperature every 4 hours or every 2 hours after rupture of membranes. Notify provider of temperature ≥ 100.4°F

6.15.5. Document respirations hourly after epidural placement.

6.15.6. Assess patient's pain hourly, or more frequently with unrelieved pain. Notify anesthesia provider if patient is experiencing unrelieved pain.

6.15.7. Continuous fetal heart rate and contraction monitoring should be continued and documented per Electronic Fetal Monitoring Guideline.

6.15.8. Continue IV infusion of Lactated Ringers at 125ml/hr. or per provider's orders.

6.15.9. Insert indwelling urinary catheter maintaining sterility according to provider order. Document date, time, patient tolerance of procedure and RN inserting the catheter in the patient's EHR.

6.15.9.1. Perform catheter care every shift and document per protocol.

6.15.9.2. Discontinue urinary catheter according to procedure prior to delivery

6.16. The epidural infusion should be discontinued at the time of delivery, unless an extensive repair or other complication is anticipated.

6.16.1. Discontinue the infusion pump.

6.16.2. Disconnect the catheter from the tubing and cap the proximal end of the catheter.

6.16.3. Notify anesthesia of delivery and need for epidural removal. Document reason for delay, and action taken if anesthesia unable to remove at time of request.

6.16.4. Document removal and discontinuation of epidural in the EHR.

6.17. Return of bladder function post epidural.

6.17.1. Decreased motor sensation may decrease the patient's urge to void, resulting in bladder distention.

6.17.1.2. Assess patients for bladder distention or fundal displacement every 15 minutes after delivery (see guideline, Care of the Laboring Patient).

6.17.1.3. Encourage patient to attempt to void, see "ambulation post epidural" below.

6.17.1.4. If patient unable to void, perform bladder scan and report results to provider.

6.17.1.5. If bladder scan results in a volume of ≥ 600 ml, catheterization is recommended (The American Society of Anesthesiologists, 2009).

7. Ambulation Post Epidural

7.1. After discontinuation of the epidural infusion the patient should be assessed for fall risk prior to ambulating using the Post Epidural Fall Risk Assessment Score (Table 1)(Frank, Lane, and Hokanson, 2009, p. 52).

Table 1: The Post Epidural Fall Risk Assessment Score (PEFRAS)

		Points	Score
History of an epidural and/or a fall	No	0	
	Yes	20	
Hours since epidural turned off	>3	0	
	>2	10	
	>1	20	
Able to lift legs, feet, and bottom off bed unassisted	No	20	
	Yes	0	
History of opioid medication administration one hour before or after delivery	No	0	
	Yes	10	
History of unstable BP (change in BP >20 mm Hg	No	0	
	Yes	10	
Preexisting illness (e.g., diabetes, preeclampsia, dehydration)	No	0	
	Yes	10	
EBL >500 mL for SVD and 1000 mL for C/S	Yes	0	
	No	20	
Test stand: can bend knees without buckling	No	20	
	Yes	0	
	Total Score		

Abbreviations: BP, blood pressure; C/S, cesarean section; EBL, estimated blood loss; and SVD, spontaneous vaginal delivery.

7.2. If the patient's risk factors are ≥ 50 points the patient should not ambulate at this time (Frank, Lane, and Hokanson, 2009).

7.2.1. If immediate transport is not necessary, reassess the patient within 30 minutes to 1 hour, If PEFRAS is <50 assist patient in ambulation.

7.2.2. If transport is immediately necessary, use alternative transfer methods such as a wheelchair or transfer in bed. Continue PEFRAS assessment every 30 minutes to 1 hour and assist patient with ambulation when score is <50.

7.2.3. If ambulation is not yet indicated and the bladder appears full or distended, have patient remain in bed and use a bedpan or insert a urinary catheter.

8. Recommended documentation.

8.1. Baseline blood pressure, pulse and oxygen saturation, ongoing assessment findings every 2 min after test dose for 20 minutes, then every 15 min for duration of epidural.

8.2. Baseline maternal temperature every 4 hours or 2 hours if membranes ruptured.

8.3. Respirations every hour after epidural placement.

8.4. Baseline pain assessment and patient's perception of pain relief every 1 hour, or more frequently if patient experiencing unrelieved pain for 24 hours, then every 4 hours. (Lippincott, 2013). Document measures taken if patient reports unacceptable levels of pain relief.

8.5. Name of anesthesia provider and date and time of:

8.5.1. Anesthesia notified for epidural placement.

8.5.2. Anesthesia provider present in room.

8.5.3. Time out performed.

8.5.5. Epidural catheter placement, test dose, loading dose, and continuous infusion start.

8.6. Patient position for procedure and patient tolerance of procedure.

8.7. Fetal heart rate tracing and uterine contraction pattern per AWHONN guidelines see, electronic fetal monitoring guidelines.

8.8. Presence of adverse effects and measures or medications given to counteract effects.

8.9. Indwelling urinary catheter insertion, assessment, and removal per guidelines.

8.10. Epidural catheter removal time.

8.11. PEFRAS score and action taken if score ≥50.