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Obstetrics Guidelines

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**SUBJECT: ANALGESIA AND ANESTHESIA FOR OBSTETRICAL PATIENTS**

**OVERVIEW**

The Department of Anesthesiology provides continuous coverage for Labor and Delivery patients, recognizing that emergencies or need for care may arise at any time. Pager # 2920 and # 2120 and phone 413-4264 and 413-0555 are always carried by the anesthesia resident and attending covering OB. In the event of a paging failure, or the need for further anesthesia help in L&D, calling the Main O.R. (996-4050) is the next fastest way to obtain assistance.

Anesthesia is not risk-free; general anesthesia increases patient risk when compared to regional anesthesia and to reduce risk the anesthesia team is informed of all high risk patients to allow for timely consultation.

Many patients may request relief of labor pain. Pain of labor and delivery can be controlled by childbirth preparation techniques, non-pharmacologic means or by pharmacologic means (including labor epidural). The choice depends on the circumstances of labor and delivery, preferences of the care provider and patient, and the judgement of the anesthesiologist. There is controversial evidence that labor epidurals may increase a patient's risk for instrumental delivery. Early discussion of this issue between the patient and obstetrical care provider is advised.

**I. Anesthesia Risk**

**A. Antepartum screening**

The OB anesthesia provider should be notified when high risk patients are admitted. Known high risk obstetric patients should be referred for anesthesia consultation prior to admission for delivery, to permit formulation of a management plan. A consult form, complete history and physical, and other relevant medical data must be sent with the patient. The anesthesia provider will relay need for further information back to the obstetric care provider, and will discuss the concerns and plan with the patient. ANESTHESIA NOTE IS DOCUMENTED IN POWER CHART. Most anesthesia consults are performed in Labor & Delivery as provider availability allows.

Factors that place a woman at anesthesia risk and are communicated to the anesthesiologist prenatally or promptly upon admission to L & D include but are not limited to:

- Morbid obesity
- Severe facial and neck edema
- Extreme short stature relative to weight
- Difficulty opening her mouth, anatomically abnormal face or mouth
- Small mandible and/or protuberant teeth
- Arthritis of the neck
- Large thyroid
- Placenta previa or abruption or accreta

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- Moderate or Severe Asthma
- Neurological disorders
- Preeclampsia
- Other significant medical or obstetric problems
- History of prior difficulties with anesthetics

**B. Aspiration risk**

Aspiration is a leading cause of anesthetic-related maternal mortality and morbidity. Aspiration of acidic gastric contents (pH less than 2.5) is more harmful than less acidic contents. Gastric acid production remains constant or increases with stress (such as labor) while peristalsis slows with pain, stress, and parenteral narcotics, causing increased gastric volume during labor. Standards include:

1. Clear liquids.
2. Histamine receptor antagonists.

Cimetidine or ranitidine may be administered the night before, and an hour before a scheduled cesarean delivery. Dosing just prior to a cesarean will have no effect on gastric acidity at induction of anesthesia, but may be of benefit by the end of the surgery, and may be warranted in patients at highest risk of aspiration.

3. Metoclopramide.

Metoclopramide (10 mg) promotes gastric emptying, raises lower esophageal sphincter pressure and acts as an antiemetic. It is useful in parturients who have recently eaten a meal, and is commonly given to parturients prior to cesarean for the antiemetic effect, as well as for aspiration prophylaxis.

**C. Absolute Contraindications for regional anesthesia in OB**

1. Uncorrected maternal hypovolemia (e.g. hemorrhage)
2. Documented coagulopathy (must be ruled out in patients with HELLP, abruption, IUFD); (No regional if PT >1.5 times normal)
3. Sepsis (chorioamnionitis is not a contraindication to regional, but the patient should first receive antibiotics)
4. Skin or soft tissue infection at site of needle placement
5. Patient refusal or inability to cooperate

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## II. Pre-Anesthetic Screening In L&D

### A. Database

The pre-anesthetic note should include the following:

1. History:

- Pre-operative diagnosis
- Planned procedure
- Past medical history
- Past surgical history; anesthetics and any problems
- Medications
- Allergies
- Familial anesthetic problems

2. Physical findings:

- Height and weight
- Baseline vitals
- Head and neck, heart and lung exam
- ASA physical status - pregnancy typically may be considered either a normal physiologic state (ASA Class I) or mild systemic abnormality (Class II).

**American Society of Anesthesiologists (ASA) Physical Classification check**

**ASA Class I** No organic, physiologic, biochemical or psychiatric disturbance

**ASA Class II** Mild to moderate systemic disturbance, may or may not be related to reason for surgery

**ASA Class III** Severe systemic disturbance, with organ system involvement

**ASA Class IV** Severe systemic disturbance that is life-threatening, with or without surgery

**ASA Class V** Moribund patient with little chance of survival, submitted to surgery as last resort

**Emergency (E)** Any patient in whom an emergency operation is required

3. Laboratory studies recommended

a. Healthy parturient:

1. Labor epidural, external cephalic version – none
2. C/S, PPTL, D&C, D&E - Hematocrit or CBC (Cerclage only if no CBC within 8-12 weeks of procedure)

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- b. Non-routine, additional labs:
1. Diabetic on insulin - recent glucose
  2. Preeclampsia - platelet count
  3. HELLP, IUFD (unknown etiology), abruption, coagulopathy: platelets, PT, PTT, fibrinogen
  4. Sickle cell disease (SS or SC): recent CBC
  5. Patients on aspirin or with preeclampsia do not require bleeding times.

### **B. Informed Consent**

Informed consent is obtained by an anesthesiologist prior to labor analgesia procedures (labor epidural, intrathecal narcotics). Prior to surgery separate anesthesia consent is not necessary, but the anesthetic plan, risks, and benefits should be explained to the patient and documented on the pre-anesthetic note.

Consent may be obtained from a patient who has received parenteral narcotics, provided the anesthesiologist feels the patient is mentally and physically competent to give consent and to cooperate for the procedure. It is preferable to obtain consent for anticipated procedures prior to the patient receiving any sedating medications.

### **III. Guidelines For Regional Anesthesia In Obstetrics**

#### **A. Labor Epidural**

- **Epidural procedure**

1. Patient should be examined by a person qualified in obstetrics and maternal and fetal status and progress of labor evaluated, when labor analgesia is requested.
2. Pre-anesthesia H&P and Informed Consent are obtained
3. Routine Hydration/Volume expansion of the patient to decrease the drop in blood pressure associated with labor epidurals is not supported by current evidence. If hydration is performed, 1000cc Lactated Ringers solution is started with the premise that it may be used to treat a decrease in maternal blood pressure with the sympathetic blockade. IV fluids need only be infusing before starting the procedure.

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4. Monitoring includes:
  - a. Blood pressure monitoring every 1-3 minutes for 20-30 minutes after boluses of local anesthetic and every 60 minutes after initiation of block
  - b. Continuous maternal heart rate and oxygen saturation monitoring during initiation of the block
  - c. Continuous fetal heart rate monitoring during use of epidural anesthesia
5. Patient may assume either lateral decubitus position or sitting position. A nurse or other support person helps position and hold the patient.
6. Family members or visitors may be asked to leave or sit away from the procedural side to minimize contamination risk and allow the anesthesiologist to fully focus on the patient.
7. Epidural is performed with strict aseptic technique which includes surgical hat, mask, gloves, and medical supplies.
8. The LDR RN continually assesses the fetus and mother during the procedure, notifies the anesthesiologist of any deviations from baseline, and documents on nursing notes and the fetal heart strip the time the procedure began, the time of test dose and patient response.
9. The epidural is initiated with a 3 cc test dose (1.5 % lidocaine with epinephrine 1:200K) to identify accidental intrathecal or intravascular injection. If the test dose is negative, one to two 5ml doses of 0.0625% bupivacaine is used to raise the sensory level to approximately T10 (level of umbilicus)
10. The patient is cared for in a position to avoid adverse maternal/fetal effects due to aortocaval compression.
11. The epidural is maintained through a continuous infusion of 0.625% bupivacaine with fentanyl (2 mcg/cc).
12. After the block is established, nursing care includes checking the maternal blood pressure a minimum of every 60 minutes, continuous monitoring of fetal heart rate, and contacting the anesthesiologist for any adverse change in the patient's hemodynamics or comfort level. The anesthesiologist checks maternal blood pressure and fetal heart rate periodically.
13. The anesthesiologist must remain immediately available to respond to any

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changes in the patient's condition.

14. Complications may include maternal hypotension or fetal bradycardia. Hypotension is treated by further boluses of Lactated Ringers, and intravenous ephedrine in 5-10 mg increments or neosynephrine in 40 mcg increments. Fetal bradycardia is treated with fluids, position change, and oxygen.
15. No one but the anesthesiologist is to adjust the epidural pump settings. The nurse or care provider notifies the anesthesiologist if the patient has too dense of a motor block or a sensory block that is too high. Signs of an excessively dense motor block are total inability of the patient to move her toes or legs. Signs of a high sensory block include complaints of shortness of breath, dyspnea, arm weakness, or difficulty swallowing. These signs may indicate a misplaced epidural catheter or excessive dose.
16. The nurse will disconnect the epidural pump [cap catheter] from the patient immediately after delivery and will call the anesthesiologist to remove the epidural catheter prior to transferring the patient from the L&D unit.

- **Resuscitation equipment and drugs**

Essential supplies for block placement are:

1. Electronic fetal monitor with BP, ECG and pulse oximetry capability, intubation equipment including: self-inflating bag and mask, laryngoscope, endotracheal tubes, oral airways; drugs including: thiopental, succinylcholine, ephedrine, neosynephrine, atropine; suction tubing and Yankauer tip
2. Suction canister with functioning wall hook-up
3. Oxygen supply

### **B. Intrathecal/Spinal Labor Analgesia**

Subarachnoid administration of preservative free narcotic or local anesthetic can provide rapid, potent analgesia. Specific settings where this may be ideal include:

- Multiparous patients in active phase of labor and making rapid progress;
- Patients whose level of discomfort makes it difficult for them to remain positioned for epidural placement;
- Some cardiac lesions where narcotics may cause less drop in blood pressure than would a

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traditional epidural.

- Patients where retaining full motor function is desirable for possible ambulation;
- When tachyphylaxis or tolerance to epidural local anesthetic has developed due to a prolonged infusion. Spinal needles typically used are small gauge (e.g. #25G or smaller) pencil-point (Whitacre<sup>TM</sup> or Sprotte<sup>TM</sup>), to minimize the risk of post-dural puncture headache.

### **Combined spinal-epidural (CSE)**

Epidural catheter can be placed at time of spinal, and infusion started without bolus dosing, or can be dosed only after narcotic has worn off.

1. Spinal preservative free (PF) medications used            2-3ml:
  - a. fentanyl 25 mcg
  - b. sufentanil 10 mcg
  - c. bupivacaine 2.5 mg (isobaric)
2. Narcotic alone (fentanyl or sufentanil) typically give analgesia lasting 60-120 min. In addition, PF morphine has been used for prolonged analgesia (250 mcg; duration 8-24 hrs). Morphine is usually sub-optimal due to its long duration and side effects, relative to the unpredictable duration of labor. Absence of motor block with intrathecal narcotics, however, may enable patients to ambulate.
3. Subarachnoid bupivacaine with fentanyl or sufentanil synergistically prolongs block to 120-180 minutes, and gives greater sensory and motor block.
4. Side effects:
  - a. Pruritis; treat with nalbuphine 5 mg IVP every 10 minutes times two doses prn.
  - b. Nausea; treat as above.
  - c. Hypotension, seen occasionally; treat as noted above for labor epidurals.
  - d. Possible loss of motor strength, dorsal column function, proprioception, so 1:1 nursing recommended for ambulating patients.

### **Continuous spinal**

Continuous spinal analgesia is done via traditional epidural catheters (#23G)

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1. Medications: intermittent boluses with narcotics or local anesthetics listed above or continuous infusion of 0.0625% bupivacaine with fentanyl (2 mcg/cc) at 1-2ml/hr
2. Risks: infection, post dural puncture, headache, medication error and toxicity.

**IV. Parenteral Opioids for Labor Analgesia**

Opioids are the most widely used systemic medication for labor analgesia. Maternal side effects include nausea, vomiting, delayed gastric emptying, dysphoria, drowsiness, and respiratory depression. Opioids readily cross the placenta because of high lipid solubility and low molecular weight, and may result in decreased FHR beat-to-beat variability but do not, in and of themselves, cause FHR decelerations. Neonatal respiratory depression is variable with dose and timing. Opioids have prolonged metabolism and elimination in neonates. (Table from Chestnut DH, ed. Obstetric Anesthesia: Principles and Practice. (St. Louis, Mosby-Year Book, Inc. 1994, 341.)

**Opioids used for labor analgesia**

Drug	Usual dose	Onset IV/IM	Duration	Comments
Morphine	2-5 mg IV/10 mg IM	5 min IV/20-40min IM	3-4 hr	Infrequent use during labor; greater respiratory depression in neonate
Fentanyl	50-100 mcg IV/100mcg IM	2-3 min IV/10 min IM	60m	Short acting, potent resp. depressant, used as continuous infusion Max 600 mcg [6 hrs] and/or PCA; Cumulative effect with large doses over time.
Nalbuphine	10-20 mg IV/IM	2-3 min IV/15 min IM/SQ	2 hr	Agonist/antagonist, less nausea and vomiting than IM 15 min IM/SQ Promethazine
Pentazocine	20-40 mg IV/IM	2-3 min IV/15 m IM/SQ	2-3 hr	Agonist/antagonist; psycho mimetic effects possible with usual doses but more frequent after large doses; infrequent use

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**V. Invasive Monitors**

Invasive monitors may be necessary in select situations. Placement of these lines however is associated with morbidity including infection, vessel perforation, hemorrhage, and pneumothorax. These lines require a nurse competent with their use and care. Specific lines and their indications are:

1. Arterial line: for beat-to-beat blood pressure monitoring, as in severe reeclampsia, hemorrhage, cardiac or CNS disorder; frequent blood draws or ABG measurements; extreme morbid obesity where NIBP cuff fit causes unreliable BP readings
2. Central venous pressure line: for assessing volume status in hypovolemic state, hemorrhage, severe reeclampsia with oliguria, sickle cell disease, end stage renal disease.
2. Pulmonary artery catheter: congestive heart failure; recent myocardial infarct; other cardiac disease; severe reeclampsia with oliguria and high CVP (>6); sepsis

**RESOURCES**

UIMC Clinical Care Guideline: G-18.1 Pain Assessment and Management

Nursing Services Policy and Procedure:

M 3.6 Patient Controlled Anesthesia

M 3.1 Acute Pain Control: Management of Epidural Catheters

UIMC Power chart order set for Patient Controlled Anesthesia

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