

# Anesthesia & Analgesia For the Laboring Woman

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## A BETTER PAIN CHART



- 0: Hi, I am not experiencing any pain at all. I don't even know what pain feels.
- 1: I am completely unsure whether I am experiencing pain or itching, or maybe I just have a tickle in my mouth.
- 2: I probably just need a Band-Aid.
- 3: This is annoying - I don't want this to be happening to me at all.
- 4: My pain is not too bad.
- 5: Why is this happening to me???
- 6: Oh, dear! My pain is starting to rise.
- 7: I see Jesus coming for me and I'm scared.
- 8: I am experiencing a disturbing amount of pain. I might actually be dying.
- 9: I am almost definitely dying.
- 10: I am actively being mauled by a bear.
- 11: Blood is going to seep out of my face at any moment!

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## What do we need to know about pain control in labor?

- ▶ Explain how gate-control theory applies to non-pharmacologic pain management
- ▶ Identify medications and side effects used for analgesia during labor
- ▶ List complications that can occur to the patient undergoing general anesthesia
- ▶ Describe nursing management during neuraxial anesthesia

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## Pain Control

- ▶ Nearly all women in labor will experience pain
- ▶ Perception of pain is highly individual
- ▶ Control pain without interrupting the labor process or doing harm to the woman or her fetus



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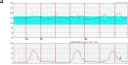
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## Factors contributing to pain in labor

- ▶ Intensity and duration of contractions
- ▶ Rate of cervical dilation
- ▶ Perineal distention
- ▶ Size and position of fetus
- ▶ Procedures
- ▶ Fatigue



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## Psychosocial factors contributing to pain perception

- ▶ Childbirth preparation
- ▶ Support persons
- ▶ Loss of control

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## Continuum of Pain Management

Non-pharmacologic →→

→→ Pharmacologic

- Positioning
- Walking
- Massage
- Relaxation
- Hydrotherapy
- Breathing techniques
- Imagery
- Music

- Analgesics
- Anesthetics

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## Gate-control theory of pain transmission

Small and unmyelinated fibers: pain and pressure of uterus, cervix and pelvic joints

Large myelinated fibers: skin impulses

Habituation to sensation – use various techniques



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## Pharmacologic - Analgesia

**Analgesia:** Decreases or blunts pain sensation

- ▶ Opioids
- ▶ Agonist or Agonist/antagonist binding at 4 opioid receptor sites

▶ Side Effects

Dry mouth, urinary retention, constipation  
 N/V, respiratory depression, sedation  
 Decrease FHR variability  
 Increased risk of neonatal respiratory depression requiring resuscitation




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## Pharmacologic - Anesthesia

- **Anesthesia:** Complete loss of sensation
- **Local anesthesia:** Infiltration of perineum and vagina or pudendal nerve block  
Potent vasodilators
- **Neuroaxial anesthesia:** Blocks sensation from a certain region of the body
- **General anesthesia:** Complete unconsciousness  
Nurse assist with airway pressure during rapid induction sequence.




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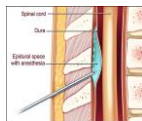
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## Types of Anesthesia

- ▶ **Neuroaxial Anesthesia/Analgesia:**  
Blocks sensation from a certain region of the body.
- ▶ **Spinal Block:**  
Single injection of local anesthetic into subarachnoid space.
- ▶ **Epidural Block:**  
Needle and catheter placement in the epidural space – before crossing the dura




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## Neuraxial Anesthesia

- ▶ **Contraindications**
  - Coagulation disorders
  - Infection at site
  - Hypovolemia/shock/hypotension
- ▶ **Relative contraindications**
  - FHR pattern associated with u/p insufficiency
  - Spinal deformity
  - Ventricular outflow obstruction - aortic stenosis, hypertrophic cardiomyopathy

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## Nursing care of patient undergoing neuraxial anesthesia

- ▶ Insure informed consent is completed
- ▶ Insure patient's questions are answered
- ▶ Bolus of IV fluid (LR, NS)



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## Nursing care of patient undergoing neuraxial anesthesia

- ▶ **Time out verification**
  - Correct person
  - Correct procedure
  - Correct equipment
  - \*[site & position]
- ▶ **Positioning/ support of patient**
  - Sitting or lateral
- ▶ **Monitoring**
  - VS
  - Pain perception
  - Fetal response
  - LOC
  - Site / tubing / pump functioning



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## Nursing care of patient undergoing neuraxial anesthesia

RN can:

- ▶ Monitor mother & fetus
- ▶ Replace empty infusion bags with new of same medications & concentration according to anesthesia orders
- ▶ Stop infusion if there is safety concern or after the birth
- ▶ Remove catheter according to institutional policy after education
- ▶ Initiate emergency measures as indicated and notify anesthesia & OB care providers

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## Nursing care of patient undergoing neuraxial anesthesia

RN cannot:

- ▶ Re-bolus by injection or increasing infusion rate
- ▶ Increase or decrease infusion rate
- ▶ Re-initiate infusion once stopped
- ▶ Manipulate dose or interval rates of PCEA
- ▶ Obtain informed consent – however, may witness consent

OBN Policy/Guideline # P-04

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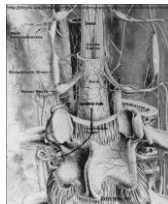
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## Epidural Procedure

- ▶ Site selection  
L3-5
- ▶ Prep and drape
- ▶ Local site infiltration
- ▶ Insertion of needle  
14-18G  
loss of resistance technique




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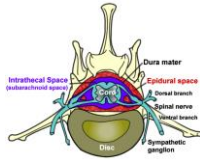
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## Anatomy of Spine




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## Epidural Procedure

- ▶ Insertion of catheter
- ▶ Test dose
  - Detect subarachnoid or intravascular injection
- ▶ Secure catheter
- ▶ Assessment of block
  - Sensory & motor
  - Onset of action
  - Missed segments (windows)

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## Epidural Procedure

- Epidural Drugs**
- ▶ Act on nerve fibers crossing the epidural space
  - ▶ Bupivacaine & Ropivacaine
  - ▶ Fentanyl
    - Reduces requirement of local anesthetic
    - Spares motor fibers
    - Reduces hypotension

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## Complications of Anesthesia

### MALIGNANT HYPOTHERMIA

- ▶ Potentially lethal complication of inherited muscular disorder
- ▶ Administering volatile anesthetics or neuromuscular blocking agents triggers hypermetabolic state
- ▶ Symptoms:
  - Rise in end-tidal CO<sub>2</sub>
  - Muscle rigidity – masseter spasm
  - Tachycardia & tachypnea
  - Ventricular fibrillation
  - Hyperthermia (104 F)
  - Acidosis
  - Rhabdomyolysis – breakdown of muscle excreted in the urine – may result in renal failure
  - CNF, bowel ischemia, compartment syndrome of limbs, DIC

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## Complications of Anesthesia

### MALIGNANT HYPOTHERMIA ETIOLOGY

- ▶ Caused by imbalance of intracellular and extracellular Ca<sup>+</sup>.
- ▶ Increased breakdown of muscle ↑ extracellular K<sup>+</sup> = dysrhythmia
- ▶ Sustained muscle contraction → increase muscle work load, oxygen consumption, lactic acid production → acidosis and elevated temp. → tachycardia, cardiac dysrhythmia, hypotension, reduced cardiac output and arrest.

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## Complications of Anesthesia

### MALIGNANT HYPOTHERMIA TREATMENT

- ▶ Discontinue triggering anesthetic agents
- ▶ 100% oxygen
- ▶ Dantrolene sodium (Dantrium) IV every 5 min. to restore Ca<sup>+</sup> balance
- ▶ Cool – ice packs, cooling blanket, lavage
- ▶ Antiarrhythmics – no calcium channel blockers (may cause hyperkalemia)
- ▶ Post emergency care:
  - Blood gases, electrolytes, coag profile and UA
  - ICU 12-48 hours
  - Family education and referral for testing

MH Hotline: 1-800-644-9732

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## Complications of Anesthesia

### POST DURAL PUNCTURE HEADACHE

- ▶ 1-2% with epidural
- ▶ 70% of dural puncture with 16G Tuohy needle
- ▶ Symptoms
  - Severe HA - ↑ sitting/standing, ↓ supine
  - Nausea/vomiting
  - Vertigo
- ▶ Treatment goal: replace lost CSF, seal puncture, control cerebral vasodilatation
  - Caffeine & opioids
  - Hydration
  - Epidural blood patch - 90+% effective




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## Complications of Anesthesia

### INTRATHECAL INJECTION

- ▶ Anesthesia level ascends toward the brain stem resulting in:
    - Severe hypotension
    - Bradycardia
    - Apnea
    - Cardiac arrest
- Reversal within 1-2 hours with proper support : IV fluids, ventilation, vasopressors

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## Complications of Anesthesia

### INTRAVASCULAR INJECTION

- ▶ Epidural space is richly vascular - negative aspiration is not a guarantee
    - Test dose - observe closely - wait 5 min - inject in small increments
    - Large doses of LA intravenously cause seizures, arrhythmias, and cardiac arrest
    - Act quickly: ABCD's of resuscitation
    - Meds: thiopental or propofol for seizure activity
    - amiodarone, vasopressin, or epinephrine for arrhythmia
- Bupivacaine Toxicity: intralipid emulsion

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## Complications of Anesthesia

### OTHER COMPLICATIONS

- ▶ **Spinal hematoma**
  - Pain, muscle weakness, bowel/bladder dysfunction
  - MRI
  - Surgical intervention
- ▶ **Spinal abscess**
  - High temperature, backache, malaise
  - Requires urgent surgical intervention
- ▶ **Anaphylaxis**
  - Symptoms
  - Treatment: Epinephrine & IV fluids

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## FDA Pregnancy Categories

- A no risk demonstrated to the fetus in any trimester
- B no adverse effects in animals, no human studies available
- C only given after risks to the fetus are considered: animal studies have shown adverse reactions, no human studies available.
- D definite fetal risks, may be given in spite of risks if needed in life-threatening conditions.
- X absolute fetal abnormalities; not to be used anytime during pregnancy

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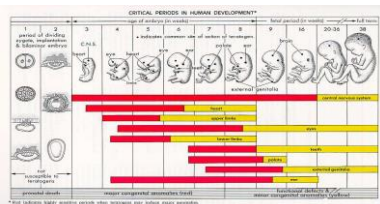
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## Fetal Development




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## Timing of Teratogenic Insult

- ▶ Week 1-2: all or nothing
  - Death or other cells assume its function
  - No malformations
- ▶ Week 3-8: organogenesis
  - Major malformations
  - Multiple systems are forming
- ▶ Week 9-term: organ systems damaged
  - IUGR
  - Mental retardation
  - Developmental / behavioral delays

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## Remind your patients.....




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## References

American Society of Anesthesiologists. 2008. *Statement on the role of registered nurses in the management of continuous regional analgesia*. Park Ridge, IL:Author.

Association of Women's Health, Obstetric and Neonatal Nurses. 2011. *Nursing care of the woman receiving regional analgesia/ anesthesia in labor*, 2<sup>nd</sup> Ed. Washington, DC:Author.

Association of Women's Health, Obstetric and Neonatal Nurses. 2007. *Role of the registered nurse (RN) in the care of the pregnant woman receiving analgesia/anesthesia by catheter techniques (epidural, intrathecal, spinal, PCA catheters)*. (Position Statement). Washington, DC:Author.

Creehan, P.A. 2008. Pain relief and comfort measures in labor. In K. R. Simpson & P.A. Creehan (Eds), *Prenatal Nursing* (pp. 443-472). Philadelphia: Lippincott Williams & Wilkins.

Leighton, B. L. & Halpern, S. H. 2002. The effects of epidural analgesia on labor, maternal, and neonatal outcomes: A systematic review. *American Journal of Obstetrics & Gynecology*, 186, 369-377.

Lowe, N. 2002. The nature of labor pain. *American Journal of Obstetrics & Gynecology*, 186, 56-524.

Nystedt, A., Edvardsson, E., & Willman, A. 2004. Epidural analgesia for pain relief in labour and childbirth: A review with systematic approach. *Journal of Clinical Nursing*, 13, 455-466.

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