UCSF Benioff Children's Hospital
San Francisco

Postpartum Assessment and Common Postpartum Complications: Pain management, Urinary Retention & Hematoma

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Objectives

- Physiology and Assessment
  - Physiologic Changes Immediately Following Birth
  - Normal Lab Values During the Postpartum Period
  - Postpartum Assessment and Care
- Evidence-Based Care Practices
  - Skin-to-Skin care
  - Delayed Cord Clamping
  - Early Initiation of Breastfeeding

Objectives

- Common Complications in the First 72 hours Postpartum
  - Pain
  - Urinary Retention
  - Hematoma

“The greatest factor influencing a woman’s transition to the stressful role of motherhood seems to be the help she receives following childbirth” (Romito P, 1989)

The Postpartum Period

- Begins after delivery of the placenta and lasts until the reproductive organs have returned to pre-pregnant condition, typically at 6-8 weeks
- The first hours after delivery are termed the fourth stage of labor.

The Fourth Stage of Labor

- The first hour postpartum is a critical time-period saturated with hormones that have profound effects
- Considered a "sensitive" period in which maternal-infant attachment can be strongly affected
- The first 24 hours is the immediate postpartum period
- The 3 months after delivery are termed the fourth trimester

Cantrill RM 2014, WHO 1998

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Goals of Postpartum Nursing Care

- Provision of:
  - a safe physiologic transition
  - relief of discomfort
  - a supportive environment for maternal-infant attachment
  - a supportive environment for the family transition to parenthood
  - resources for the woman

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Physiologic Changes Immediately Following Birth

- Placental separation
  - Uterine contraction shears placenta off endometrial wall
  - Retroplacental hematoma formation further pushes placenta into lower uterine segment

- Clinical Punchline: Four classic signs of placental separation:
  1. Lengthening of umbilical cord
  2. Gush of blood
  3. Uterus becomes globular
  4. Uterus rises in abdomen

Physiologic Changes Immediately Following Birth cont….

- Shivering is observed in 25-50% of women first 30 minutes after birth
- Uterus is initially at umbilicus and firm to palpation
- Bleeding is normally < 500 cc following a vaginal birth
  - Multiparous women tend to have 1-3 more episodes of sudden “gush” of blood with firm fundus in first 20-30 minutes

Ravid D 2001

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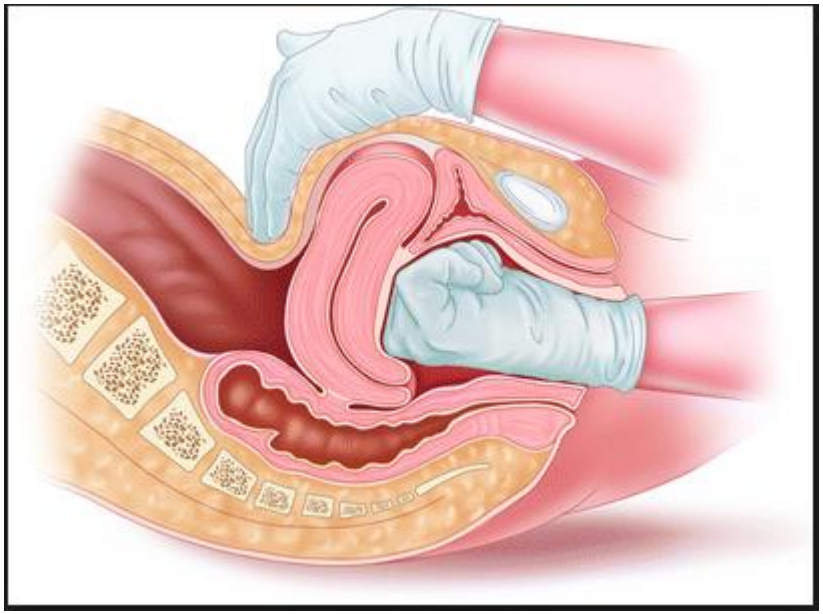
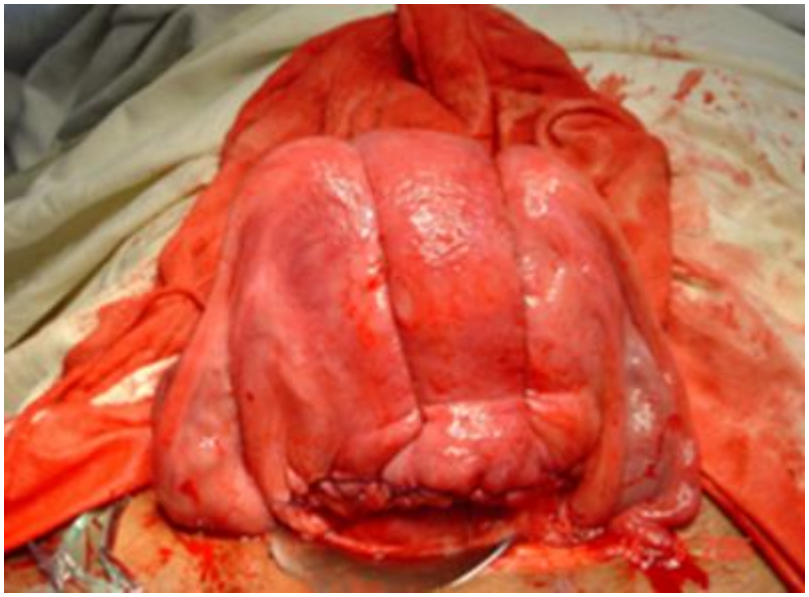
Physiologic Changes Immediately Following Birth cont…

- Contraction of uterine muscle following delivery is necessary to clamp off blood vessels supplying the placental site
- Uterine ligaments remain overstretched, and allow the uterus to shift from side to side
- Clinical Punchline:
  - Uterine atony is the primary cause of postpartum hemorrhage
  - Uterine position palpated abdominally can be used to detect urinary retention.

UTERINE ATONY





Postpartum Lab Values

- Hgb and Hct fluctuate secondary to changes in plasma volume, generally drops to nadir on PP day 2, and returns to normal by 1 week

- WBC is commonly elevated during labor and begins to decline PP (WBC of 20,000-25,000 common)

- Clinical Punchline
  - Hgb, Hct, and WBC values are not reliably reflective of anemia or infection in the first days

Nichol B 1997, Parlow DB 2004

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Postpartum Lab Values

- Liver enzymes
  - AST and ALT should not change during normal course of pregnancy but they increase intrapartum and return to normal values by 3 weeks

Postpartum Lab Values cont…

- Fibrinogen increased by 50% in pregnancy and returns to pre-pregnant values by 2-3 weeks
  - Risk for thrombosis remains until about 6 weeks postpartum
- Clinical Punchline: Pre-eclampsia
- OB providers will watch trends of AST/ALT/Cr and a CBC postpartum, follow trends and signs & symptoms

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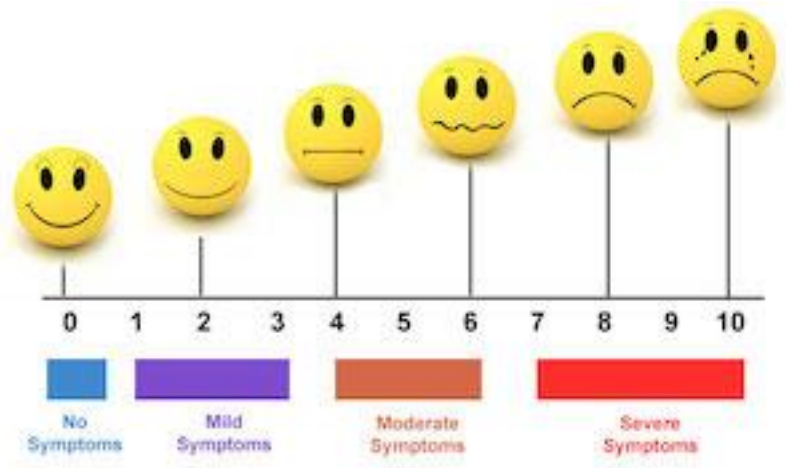
Postpartum Assessment

- Subjective:
  - Pain
  - Other c/o
- Objective:
  - Vital signs
  - Breasts
  - Abdomen and uterus
  - Bladder
  - Bowel
  - Lochia
  - Perineum
  - Legs
- Psychosocial:
  - Cultural factors
  - Maternal adjustment
  - PTSD
  - Depression
  - PP Psychosis

The 5th Vital Sign

Pain is thought to be the 5th vital sign and we need to assess for its presence with every set of VS as well as prn.



PAIN

- Subjective/Objective Assessments:
  - Pain should be characterized by
    - Position
    - Degree
    - Radiating
    - Associated symptoms
    - What makes it better? Worse?
- Example: Is this laceration pain that is centered in perineum and increases with movement or a hematoma that is characterized by increasing pain unrelieved by any position?

Pain cont…

- Afterpains
  - decrease in frequency after the first few days, and usually are associated with:
    - Breastfeeding
    - Multiparity
  - Rx is Ibuprofen 400-800 mg taken ½ hr before nursing
  - If pain unresolved with Ibuprofen may consider Norco (5 mg Hydrocodone and 325 mg Acetaminophen) NTE 4g/day of Acetaminophen

Deusen AR 2011, Nauta M 2009

Non-Steroidal Anti-inflammatory Drugs (NSAIDS)

- Three types available
  - Tylenol:
    - Anti-pyretic and analgesic
  - Aspirin:
    - Anti-inflammatory, antipyretic and analgesic
  - Ibuprofen:
    - Anti-inflammatory, antipyretic and analgesic

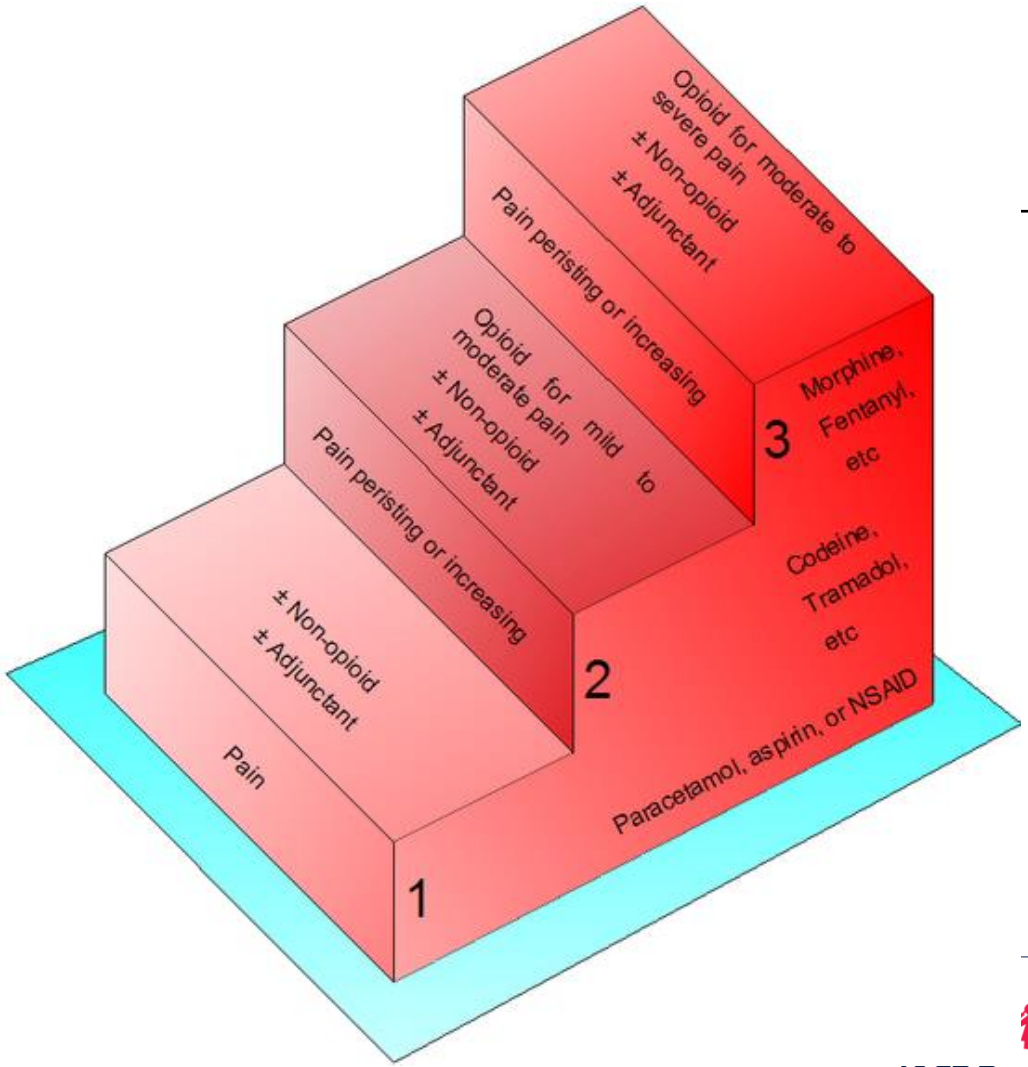
NSAIDs

- NSAIDs have a "ceiling effect:" Increasing dosage beyond a certain point will not ↑ analgesia, but will ↑ toxicity

- Mechanism of action is via inhibition of prostaglandin formation that
  - Initiates platelet aggregation, starts inflammation

- Contraindications
  - Risk for active bleeding (inhibits platelets)
  - Hx of gastric bleeding or ulcers
  - Asthma: Can cause bronchoconstriction
  - Allergy to aspirin

World Health Organization Analgesic Ladder



World Health Organization

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Post Operative Pain: Multimodal Analgesia…

- Using analgesics that have different mechanisms of action to potentiate effect
  - Multimodal analgesia impoves pain control and minimizes adverse side effects

- NSAIDs and opiates affect pain via different mechanisms
- Opiates: work at dorsal horn, no effect on inflammation
- NSAIDs decrease inflammation and stop transmission at the site of injury

Buvanendran A 2009

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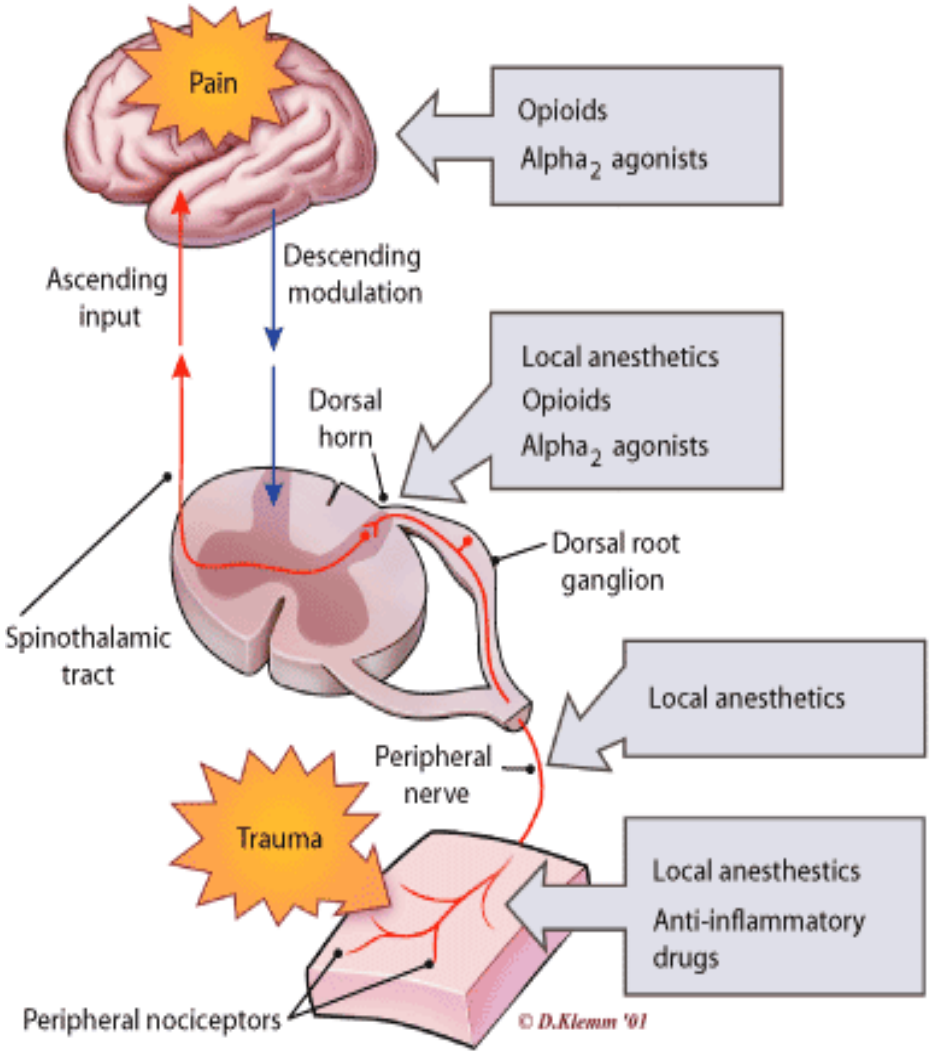
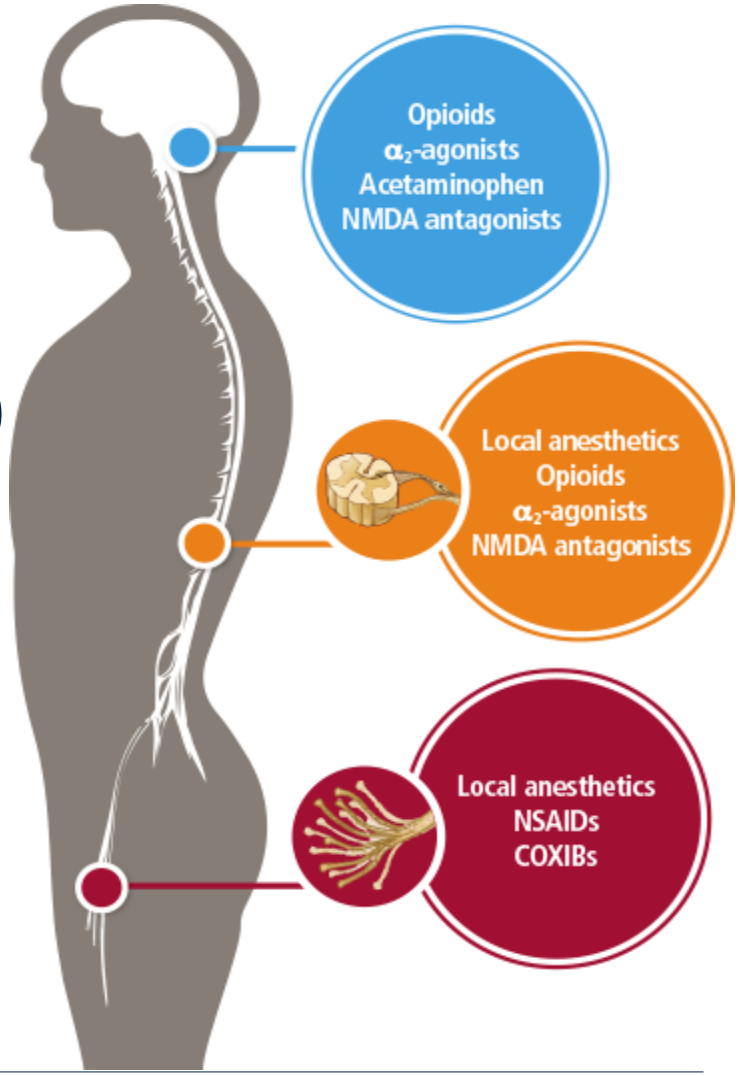
Multi-Modal Analgesia: Mechanism of Action



Post Operative Pain: Multi-modal Analgesia…

- Multimodal analgesia is "dose-sparing" and allows lower doses of opioid (30-40%)
- Works best with scheduled dosing rather than PRN
- Avoids playing "catch up"



Buvanendran A 2009

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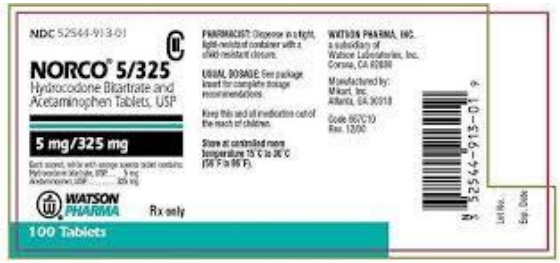
A Note About Acetaminophen



- Acetaminophen is often hidden in short acting opioids such as Tylenol with Codeine, Norco, Percocet
- Maximum daily dose of acetaminophen is 4g.
- Combination products have recently been reformulated so the maximum dose of acetaminophen per tablet is 325 mg

A Note About Codeine

- Some women are ultra-metabolizers of codeine and they may need higher doses to achieve pain control
- Codeine is metabolized to morphine in the liver
- Morphine accumulates in breast milk and there are case reports of newborn overdose secondary to high levels of codeine metabolites in breast milk
- Codeine may decrease infant sucking vigor and alertness
- Codeine is not recommended for postpartum pain if other analgesics are available

Lam J 2013, Madidi P 2009, Koren G 2006

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Other subjective assessments

- Patient mood
- Affect
- Bonding with baby/skin to skin
- Support into motherhood

Psychosocial Assessment

- Cultural factors and expectations
- Maternal adaptation to parenthood
- Family adjustment
- Emotional recovery from birth
  - PP Psychosis
  - PP depression
  - PTSD

PTSD: How Often do Women have a Negative Birth Experience?

- 20-30% of women report “traumatic experience” following childbirth
- 5-7% express dissatisfaction with birth 2-4 months after birth

Soet JE 2003, Beck CT 2004 , Waldstrom U 2004

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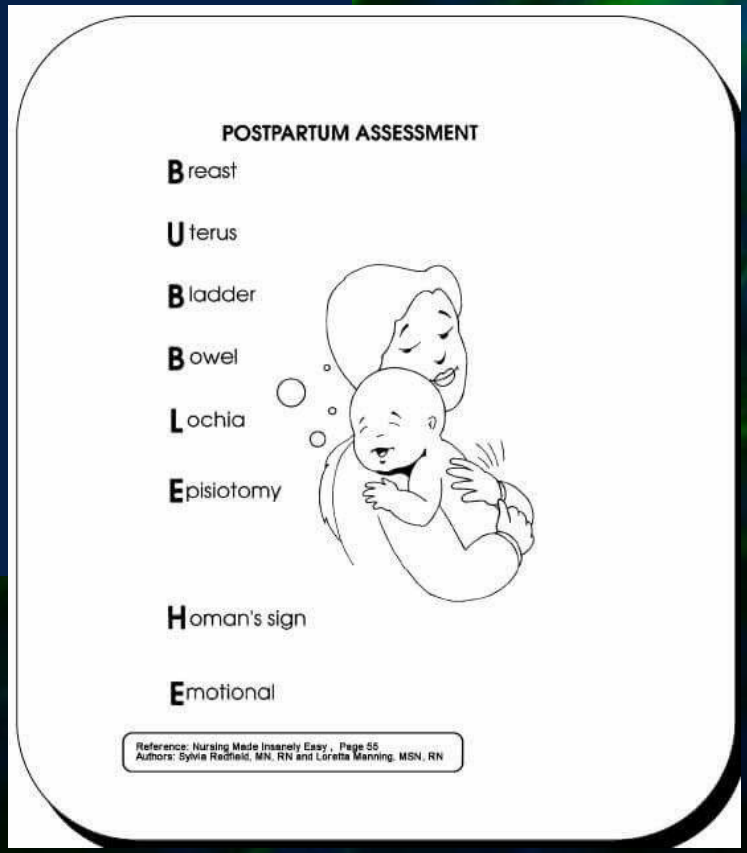
Postpartum Physical Assessment

4/19/2018



Breasts: Anatomical Changes

- Engorgement: Day 2-4 (range 1-7 days)
  - Increased vascularity, edema
  - Enlargement of the lobules as a result of increase in the size of the alveoli
  - Resolves in 48-72 hours
  - May be associated with slight increase in temperature.

- Treatment: WASHED green cabbage leaves, ice packs prn, NSAIDS, nursing through discomfort, warm showers

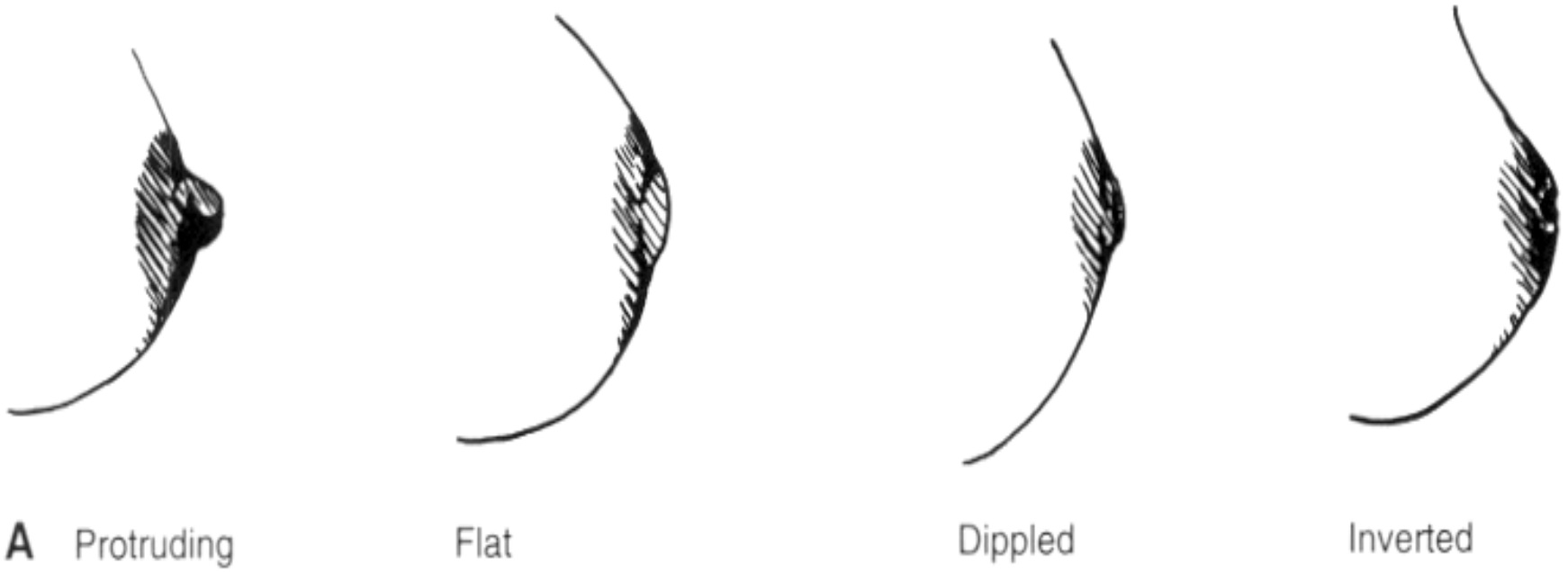
Clinical Punchline

- Engorgement is a combination of breast milk and increased vascularity. Therefore, pumping to decrease pain and swelling will only stimulate the production of more milk and can exacerbate engorgement

Breasts

- Possible Problems:
  1. PE findings that impede breastfeeding
     - Nipple type or engorgement makes latch hard
     - Cracks or bleeding that causes too much pain to breastfeed
  2. Breastfeeding assessment: Maternal/infant positioning and latch that may impede success
- Subjective/Objective Assessments
  - Redness and/or Engorgement
  - Nipples
    - Protruding, flat, inverted
    - Nipples cracks or bleeding

Assessment of the Nipple

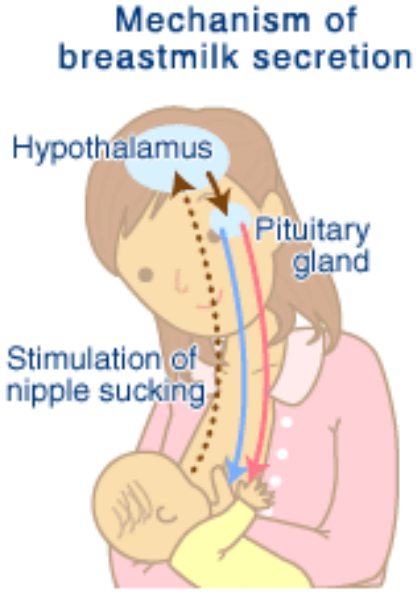


Breasts: Lactogenesis II

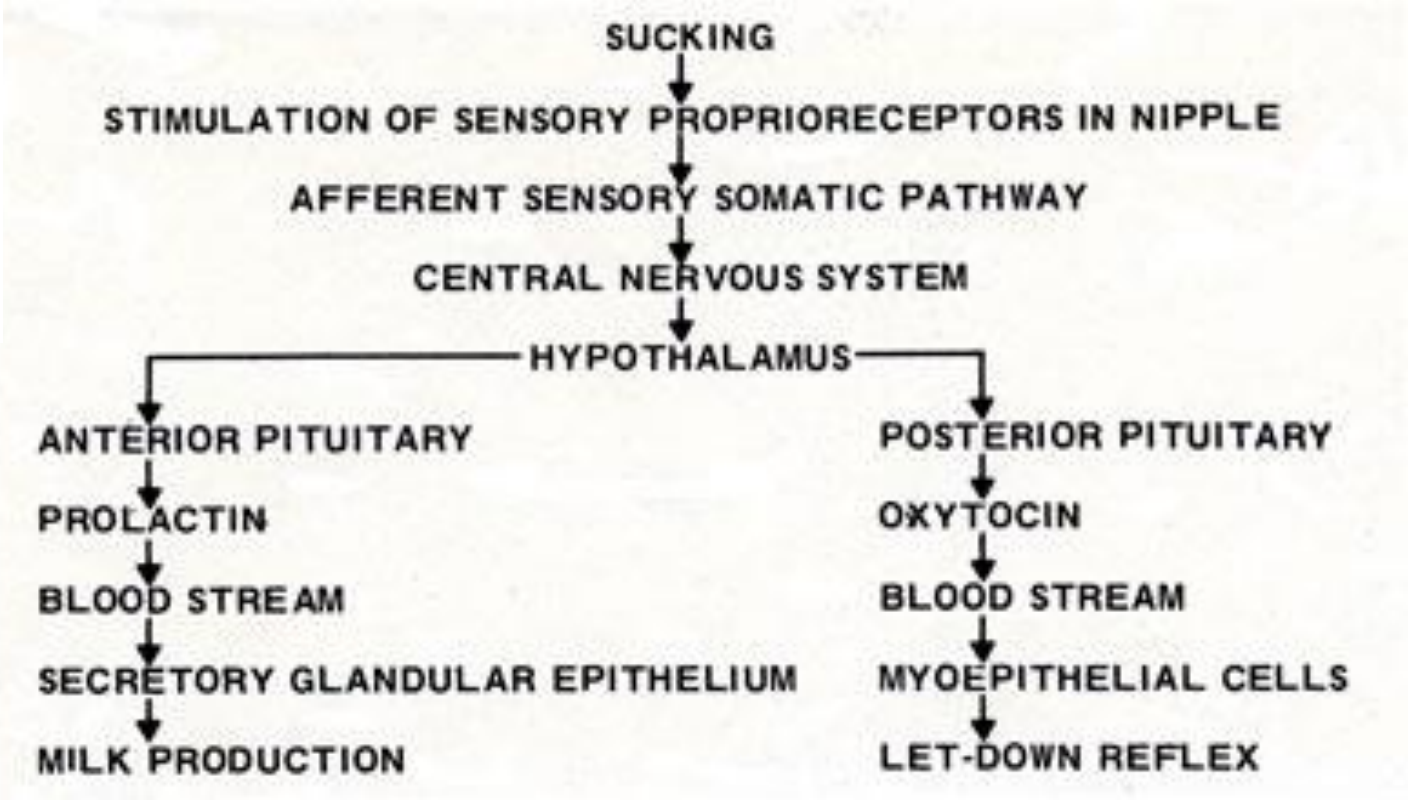
- Lactogenesis I is the development of the ability to produce and secrete milk which occurs in the second half of pregnancy

- Lactogenesis II is the initiation of copious milk production/secretion
  - Triggered by drop in circulating progesterone, elevated prolactin, and requires oxytocin for milk ejection
  - Can occur 60-100 hours postpartum
    - Delayed following cesarean section

Hormonal Control of Milk Synthesis and Milk Ejection



- Prolactin: Milk production
- Oxytocin: Milk ejection from myoepithelial cells around alveoli



Breasts cont…

- Goal: The mother demonstrates ability to feed infant successfully.
  - The 1st episode of breastfeeding should occur as soon as possible after birth (within the first 1hr is ideal), while the newborn is still alert.
  - 24 hr rooming in should be encouraged
  - No bottles should be given to the newborn unless bottle feeding is feeding decision of choice by parent or medically necessary

- Newborns should be encouraged to BF at least every 2-3 hrs, with as much time at breast each feed as possible
- Supply and demand
- Power of skin to skin

- Use the latch scoring system to assess feeding

Breasts Assessment/ Latch Score

	0	*1*	*2*
L Latch	Too sleepy or reluctant No latch achieved	Repeated attempts Hold nipple in mouth Stimulate to suck	Grasps breast Tongue down Lips flanged Rhythmic sucking
A Audible swallowing	None	A few with stimulation	Spontaneous and intermittent > 24 hours old Spontaneous and frequent < 24 hours old
T Type of nipple	Inverted	Flat	Everted (after stimulation)
C Comfort (breast/ nipple)	Engorged Cracked, bleeding, large blisters or bruises Severe discomfort	Filling Reddened/small blisters or bruises Mild/moderate discomfort	Soft Nontender
H Hold (positioning)	Full assist (staff holds infant at breast)	Minimal assist (e.g., elevate head of bed, place pillows for support) Teach one side; mother does other Staff holds and then mother takes over	No assist from staff Mother able to position and hold infant

Abdomen: First the Uterus

- Possible Problems
  - Uterine atony that causes hemorrhage
  - Use uterine position to assess for retained clot or full bladder

- Subjective/Objective Assessments:
- Firm or Boggy
- Position: midline or deviated to right or left
- Uterine Involution: Fundal height in relation to umbilicus and symphysis. Normal findings are:
  - Immed. After birth: at U or 1 cm above umbilicus
  - 24 hours after birth: 1 cm below umbilicus
  - 72 hours after birth: 3 cms below umbilicus

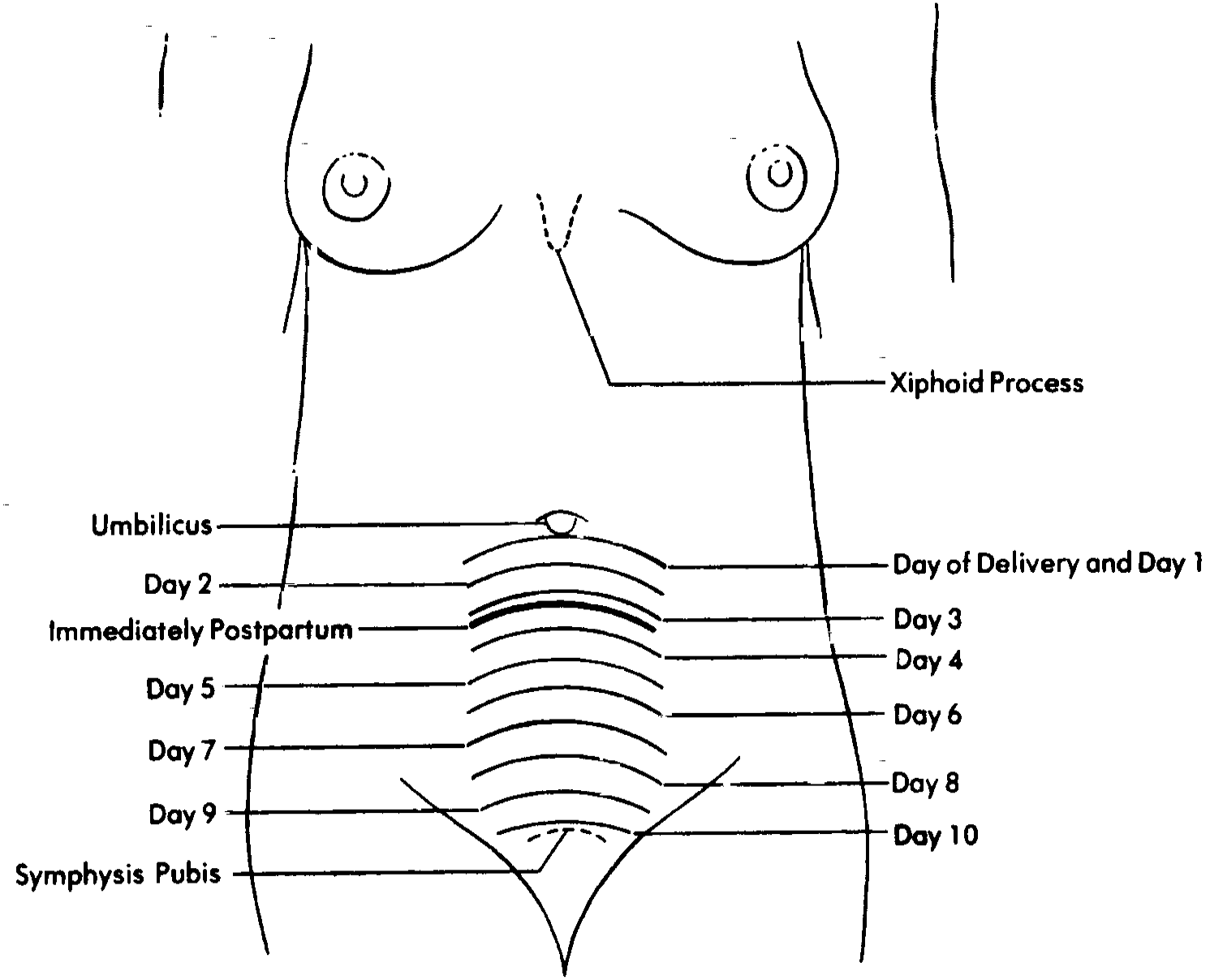


Figure 14.1. Fundal height and uterine involution. (Reprinted with permission from Varney, H. (1980). Nurse-midwifery (p. 349). Boston: Blackwell.)

Fundal Massage

-importance of bimanual massage

Abdomen: Uterus cont…

- Nursing Actions
  - Uterus:
    - Vigorous massage to express clots only as needed
    - Gentle massage to stimulate uterine contractility?
    - Oxytocin is more effective than massage
    - Assist to void within first hour after birth

<u>Clinical Punchline:</u>

- Indications for physician evaluation include:
  - ↑ Pulse and/or ↓ B/P
  - Bleeding not resolved with massage or expression of clots

Abdomen: Incision

- Possible problems:
  - Infection
  - Incision not approximated

- Subjective/Objective Assessments:
  - Induration or redness around incision, notify clinician and draw line around redness to mark extension as it is observed
  - Area of oozing or gaping in incision: Notify clinician

Abdomen: Bladder

- Possible Problems

1. Urinary Retention: > 150 cc post-residual volume
2. Incomplete emptying
3. UTI

Subjective/Objective Assessments:

- Urinary output: Use of catheter or hat
- Frequency of voids and voiding pattern
- Incontinence present?

Abdominal Exam: palpate uterine displacement

Abdomen: Bladder cont….

- Goal:
  - Spontaneous voiding resumes by 6 to 8 hours
  - Urinary output: first void more than 200 cc
- Nursing Actions:
  - Assist with first void within first hour after birth
    - Bedpan if needed
    - Pain med prior to ambulating
    - Run water
    - Void in shower or bath
    - Peppermint oil prn
    - Catheterize if the above measures fail

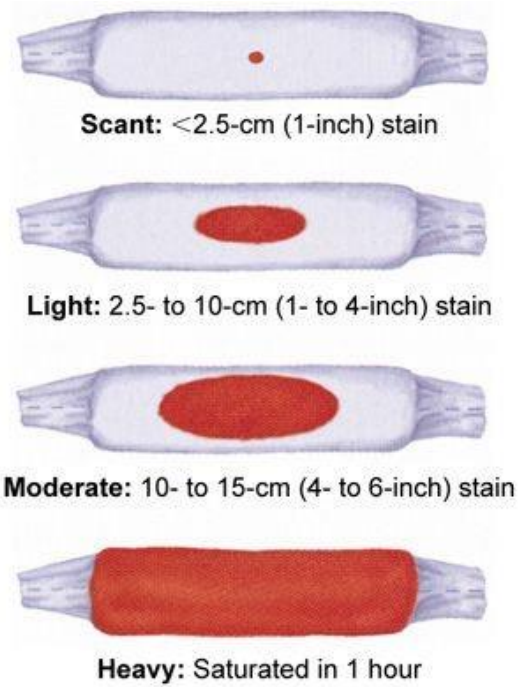
Void Reminders

- If patient is nursing, remind her to void before each breastfeeding session.
- If not, simply have her postpartum routine be not waiting more than 2-3 hours in between voids.

Bowel

- Possible Problem: Several factors increase risk for constipation postpartum:
  - Lack of normal diet during labor
  - Prenatal vitamins
  - Pain from perineal sutures
  - Pain medications
  - Lax abdominal muscle tone
- Nursing Action/Education
  - Bowel movements usually resume 2-3 days PP
  - Review effects of opioid medications
  - Ensure pain relief from laceration or hemorrhoids

Lochia cont….



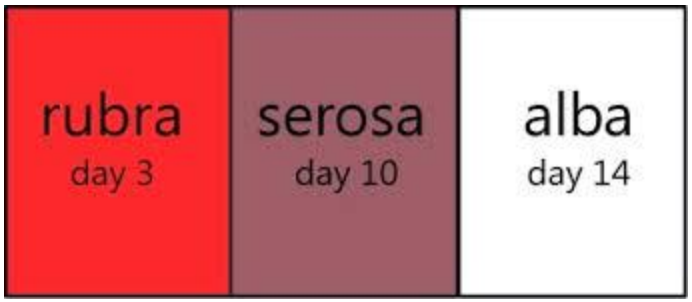
- Subjective/Objective Assessments:
  - Type
  - Amount
  - Odor
  - Clots
- Assessing amount
  - Scant: < 1 in. on menstrual pad in 1 hour
  - Small: < 4 in. stain on pad
  - Moderate: < 6 in. on menstrual pad in 1 hour
  - Heavy: saturated menstrual pad in 1 hour
  - Excessive: saturated pad in 15 minutes

Lochia

- Possible Problems
  - Hemorrhage
  - Infection
  - Signs of retained clot

- Diagnosis
  - Slow steady bright red bleeding indicates cervical laceration
  - Periodic gushing of darker red bleeding indicates uterine atony
  - Increasing contraction pain, firm uterus that is larger than it should be, watery lochia suggests retained clot

Lochia



- Rubra: Day 0-3rd or 4th day. Red discharge that may contain shreds of tissue and decidua
- Serosa: Usually lasts 4-10 days, but may last longer. The median duration is 22 days. 15% of women have serosa at the 6 wk check up. Pink to brown and more watery
- Alba: Usually lasts 7-10 days. Yellowish white discharge, non foul

Fletcher S 2012

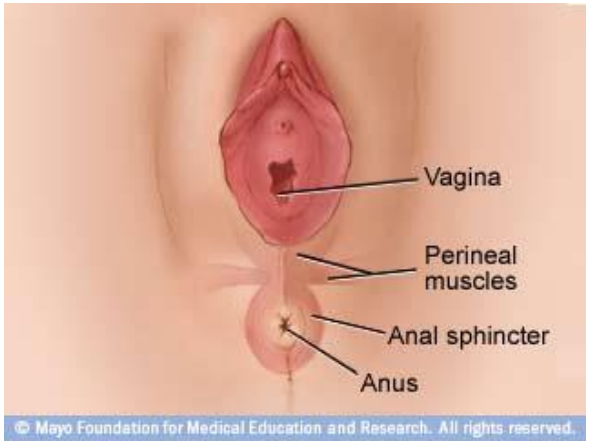
Perineum

- Possible Problems
  1. Laceration not well approximated, no infection
  2. Labial edema that impedes urination
  3. Hemorrhoids
  4. Hematoma

- Subjective/Objective Assessments
  - Lacerations
  - Hematoma
  - Hemorrhoids

Perineum

- Subjective/Objective Assessments
  - REEDA
    - Redness
    - Edema
    - Ecchymosis
    - Drainage
    - Approximation of edges



Postpartum Hematoma

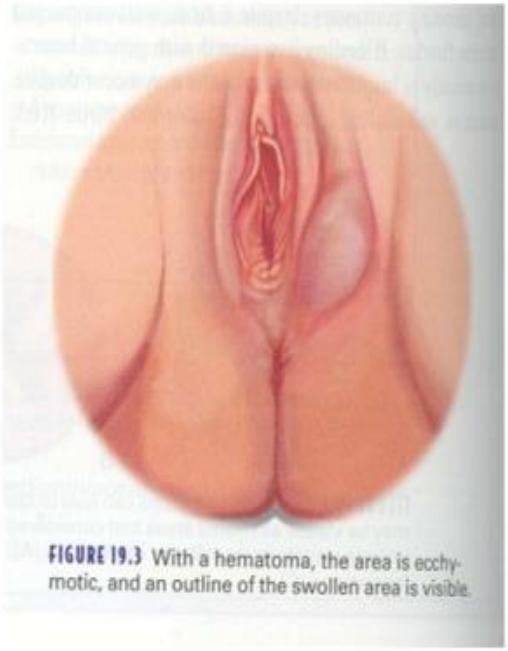
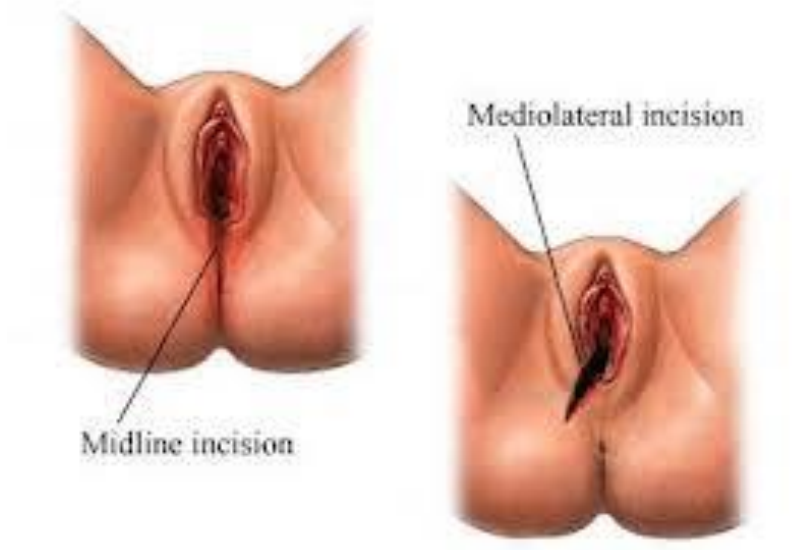


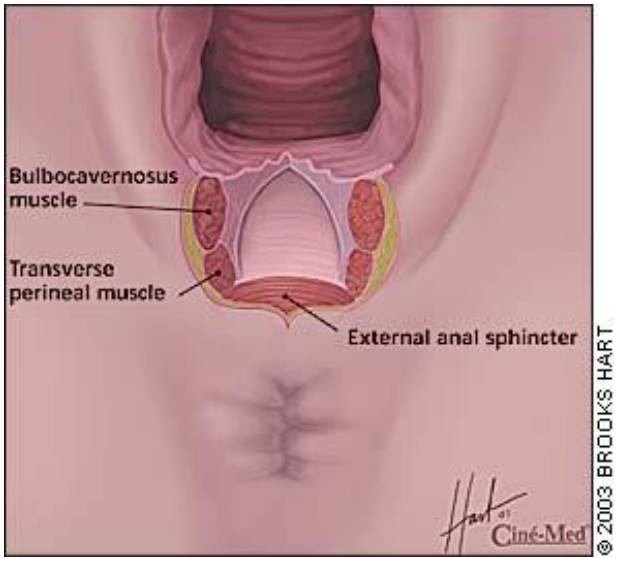
FIGURE 19.3 With a hematoma, the area is ecchymotic, and an outline of the swollen area is visible.

- More likely in AMA
- With OVD: Forceps, Vaccum
- LGA, 4g or more
- Nulliparous
- Assess in recovery, q shift, and prn symptoms

Lacerations

- First- tear of vaginal mucosa
- Second-tear into perineum
- Third-anal sphincter involved
- Fourth-includes tear of rectum





Perineum Nursing Care

- Ice to perineum x 24 hours. Icing perineum X 20 minutes periodically may decrease edema. Pericare after each void/BM
- Sitz baths 3-4 x day after the first 24 hours

- Analgesia: Ibuprofen 400-800mg q 4-6hrs x 24-48 hours with Norco if needed

Hemorrhoids

- Analgesia for Hemorrhoids:
  - Topical Witch Hazel (Tucks)
  - Topical corticosteroid
  - Topical anesthetic (Lidocaine spray)

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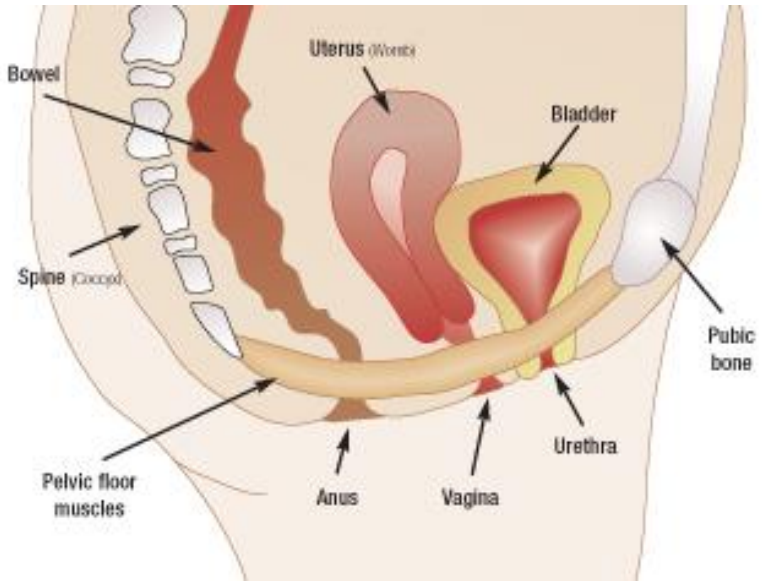
Pelvic Floor

- Fascial stretching and trauma to the pelvic floor may occur during the birth. Fascia does not always heal or return to pre-pregnant state

- Clinical Punchline:
- Stress incontinence
- Kegel exercises daily



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A deeper dive….assessment of the normal and abnormal

4/19/2018

Cardiovascular and Respiratory Systems

- Autotransfusion from placenta: size of vascular bed is reduced by 10-15%
- 500-750 cc blood immediately added to maternal circulatory system
- Diuresis begins about day 2 PP as extracellular fluid returns to vascular circulation
- Clinical Punchline:
  - Pulse rate should remain normal or decrease
  - Dramatic fluid shifts occur immediately postpartum that increase the risk for orthostatic hypotension, pulmonary edema

Cardiovascular and Respiratory Systems cont..

- Cardiac output (CO) and stroke volume ↑ by 80% in the first 10-15 minutes after birth and then return to pre-labor values about an hour later
  - CO remains high for the first 48 hours PP then returns to pre-pregnant values by 6 weeks PP

- Clinical Punchline:
  - These dramatic shifts in blood volume can cause adverse outcomes in women with pre-existing cardiac disease, hypertension, and/or pre-eclampsia

Respiratory System

- Pulmonary edema
- Subjective/Objective Assessments:
  - Breath sounds: Rales, rhonchi, wheezes, absence of sound
  - Respiratory rate: normal 12-20, < 12 respiratory depression
  - O2 saturation as indicated, goal above 95 %
- Normal Findings:
  - Breath Sounds: clear to auscultation bilaterally
  - Respiratory rate normal, O2 sat above 95%

Renal System

- Urinary Tract and Bladder:
  - GFR, renal blood flow, and plasma creatinine all return to pre-pregnant levels by 6 weeks PP
  - Bladder capacity increases secondary to decreased intra-abdominal pressure and relaxed abdominal muscles
  - Trauma to bladder/urethra may cause edema and decreased bladder sensation first 24 hrs
  - Anesthesia effects of decreased sensation can last up to 24 hours

Renal System cont…

- Urinary Output:
  - Increases within 12 hrs postpartum
    - Diuresis (rapid diuresis first 3 days)
    - Diaphoresis (two months)

- Clinical Punchline:
  - Mild proteinuria common for first 2-3 days
  - Transient stress incontinence first 6 weeks postpartum is common
  - Increased risk for urinary retention (diuresis and increased urinary output)
  - Increased risk for UTIs and pyelonephritis

Rogers RG 2007

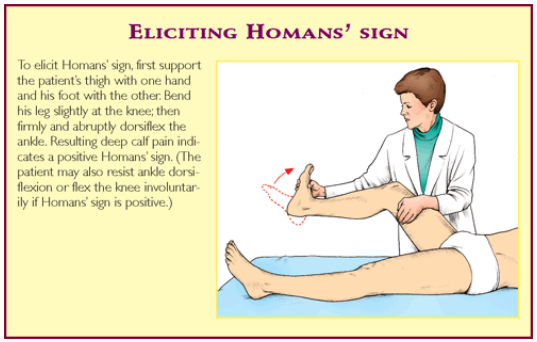
Coagulation System

- Pregnancy is a "hypercoaguable state"
  - Increased circulating concentration of procoagulation factors: *VII, VIII, X, and fibrinogen are increased*
  - Vast amounts of tissue factor in placenta. Tissue factor can initiate clotting sequence
- Clinical Punchline:
  - Risk of venous thromboembolism is higher in the postpartum period than during pregnancy

Coagulation System: Assessment for DVT

- Possible Problems:
  - Deep vein thrombosis of superficial phlebitis

- Subjective/Objective Assessments
  - Signs of DVT include:
    - Redness or discolored skin
    - Pain with standing or walking
    - Swelling (one leg larger in diameter than the other)
    - Warmth over affected site
    - Homan's has high false + rate

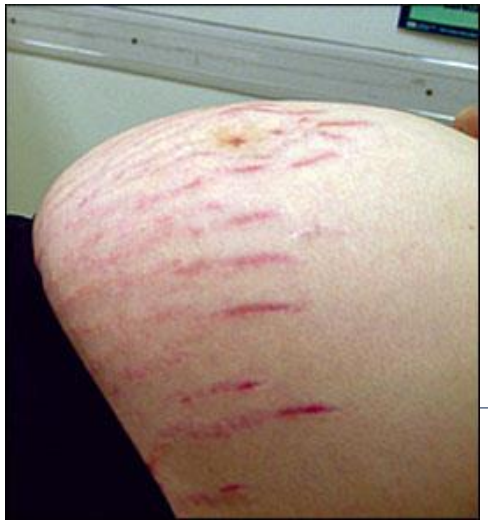


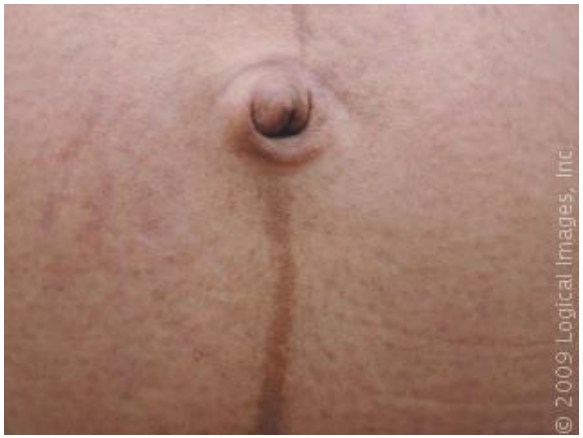
Metabolic Changes

- Immune suppression followed by abrupt return of immune function postpartum predisposes women to postpartum thyroiditis which is transient hypo or hyperthyroidism.
  - Usually develops 1-3 months postpartum
- Pregnancy-induced insulin resistance falls during labor and birth.
  - insulin requirements of women with diabetes drop precipitously in the immediate postpartum period
  - Breastfeeding may potentiate risk for hypoglycemia

Skin

- Diastasis of the rectus may be evident, and usually is re-approximated by 3 months postpartum
- Striae will change from red to white and barely visible by 3 months postpartum
- Linea negra and chloasma will disappear within 2-3 months





Cultural Factors and Personal Expectations

- Postpartum period is important in multiple cultures

- Many cultures have rituals and proscribed behaviors designed to protect the mother and infant during this period
  - "Doing the Month": 40 days of rest and isolation
  - Dietary restrictions
  - Lochia may be considered "unclean"
  - Possible bathing restrictions

Picture of Postpartum PTSD

- Identifies a traumatic event
- Flashbacks or nightmares about the event
- Unable to recall important aspect of the event
- Exaggerated startle response
- Hyperarousal
- Avoids reminders of event
- May want retaliation or sensitive to injustice
- Panic attacks, sweating, or palpitations

- May occur anytime in the early postpartum period

Picture of Postpartum Depression

- Depressed mood, tearfulness, hopeless and feels empty inside
- Loss of pleasure in all daily activities
- Changes in appetite and weight
- Sleep problems
- Extreme fatigue or loss of energy
- Feeling of worthlessness or guilt

- Difficulty concentrating and making decisions
- Suicidal ideation
- Usually occurs after 6 weeks, but may occur up to to 1 year postpartum

Postpartum Psychosis

- Onset typically occurs on the third postpartum day

- Observable Symptoms:
  - Irritability
  - Restlessness
  - Crying spells and Sleeplessness
  - Anger toward family members, including infant
  - Anxiety
  - Moodiness

Objectives

- Common Complications in the First 72 hours Postpartum
  - Urinary Retention
  - Endometritis
  - Thrombophlebitis

Case Study
When you Come on Shift……

- 38 Y/O G3 P2, 41 3/7 weeks
  - Prodromal labor x 24 hours. Labor augmented with Pitocin
  - 5 min 2nd stage and NSVD of healthy baby boy over intact perineum
  - Manual removal of placenta.
  - EBL 600 mls
  - IV Pitocin 20 units in 500ml Lactated Ringers

Orders
- Discontinue IV when stable
- Routine postpartum orders

Case Study (cont'd)

This is your first postpartum exam 3 hours after her birth

- She has voided once "a small amount"
- VS: B/P146/90, P=115, R=26, T=37.8ºC.
- DTR's 2+, no clonus
- Fundus 2 fb above umbilicus, displaced to the right; firm
- Lochia moderate and soaked Chux pad
- Transient dizziness when standing

A Penny for your thoughts

Urinary Retention

- Definition: Inability to void spontaneously and/or residual volume > 150cc after spontaneous void but no standard definition
- Incidence may be as high as 14% after vaginal birth and 24% after cesarean section
- Delayed diagnosis and treatment can result in persistent urinary retention (more than 1-2 weeks)

Yip SK 2005, Kekre AN 2010, Liang CC 2007, Groutz A 2001

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Urinary Retention

- Predisposing factors
  - Primiparity
  - Operative vaginal delivery (damage to pudendal nerve)
  - Catheterization before delivery
  - Induction or augmentation of labor
  - Prolonged 1st and 2nd stages
  - Anesthesia (especially epidural and/or morphine)
  - Episiotomy or severe laceration

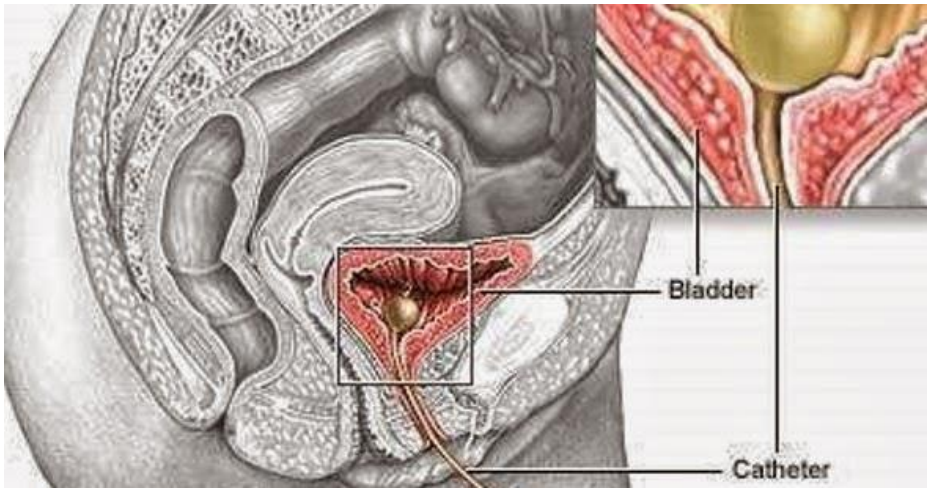
- Complications
  - Injury to bladder neck innervation

Yip SK 2005, Kekre AN 2010, Liang CC 2007

Urinary Retention

- Normal non-pregnant bladder capacity is 350-450 cc. Desire to void usually at 150 - 200 cc

- Women should be able to void by 2-4 hours after vaginal birth



Urinary Retention

- Signs and symptoms:
  - Suprapubic tenderness or no symptoms
  - Inability to void even if she is up to bathroom or having frequent small amount voids
  - Uterine fundus is high and displaced to one side
  - Excessive bleeding with clots
  - Palpable bladder

Urinary Retention: Nursing Actions

- Non-intervention measures first!
  - Oral analgesics
  - Provide privacy
  - Warm bath
  - Peppermint oil…(works 60% of the time for postoperative retention by relaxing urethra)

- Some institutions recommend using ultrasound and if bladder volume is > 400 cc then move to catheterization

Yip SK 2005

Urinary Retention: Indwelling vs Intermittent Catheterization

- If catheter necessary, use Foley, what residual volume requires indwelling catheter?
  - —Few studies on this with small numbers of women
  - —In general if volume is < 700 ccs, the likelihood of needing a repeat cath is unlikely

- If you place an indwelling catheter, how long do you leave it in place?

  If indwelling catheter is in place > 24 hours, approximately 40% of women will develop a UTI

Yip SK 2005

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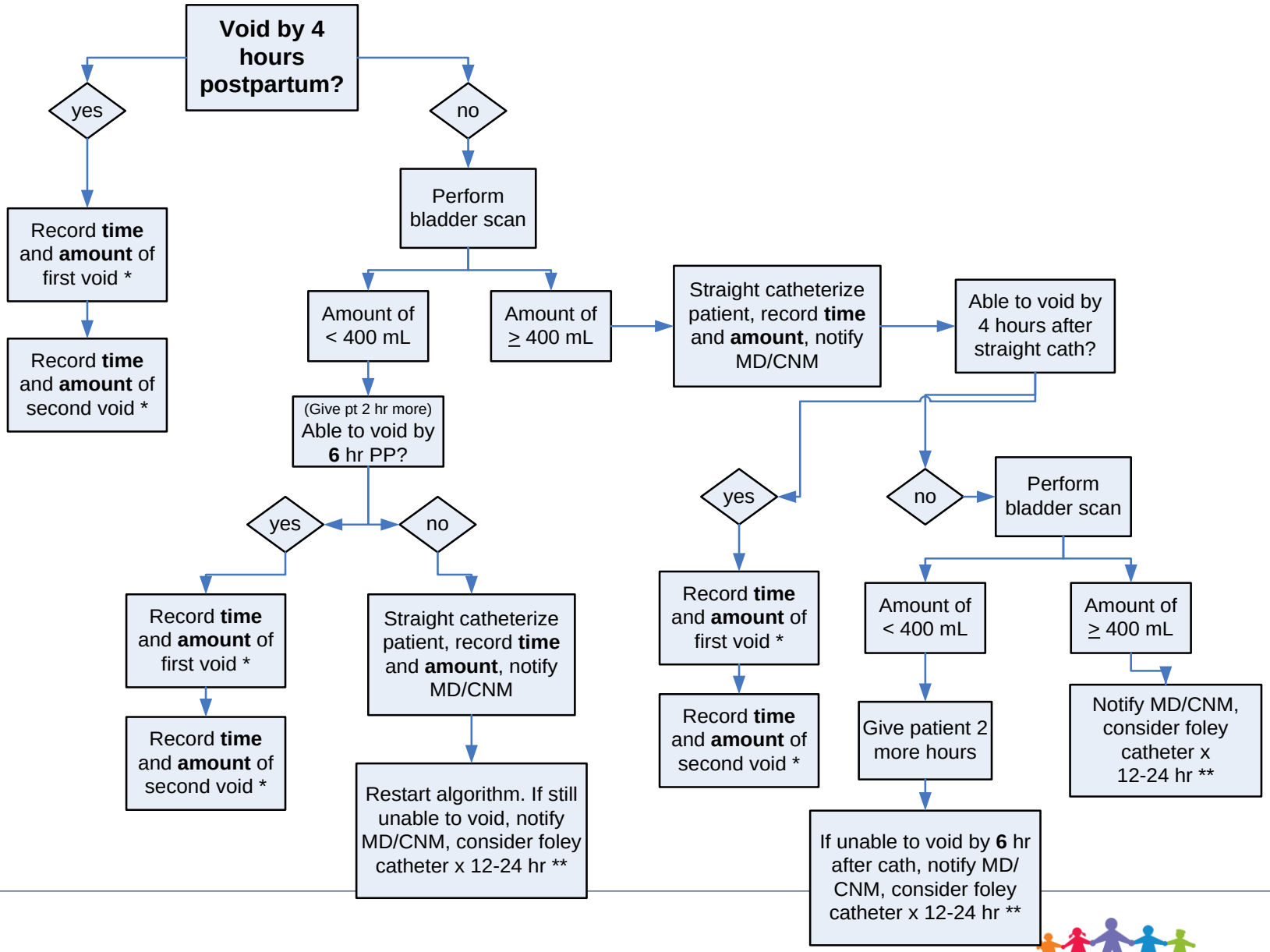
UCSF Voiding Algorithm- an example



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Endometritis

- Definition:
  - Endometritis: infection involving the mucosal or decidual layer of the endometrium
  - Endomyometritis: Infection that extends into the myometrium
  - Parametritis: Infection that extends to pelvic structures surrounding uterus
- Occurs in 1-3% of women following NSVD and 10-50% following cesarean section

Burrows LJ et al 2004

Endometritis

- Risk factors include:
  - Cesarean birth
  - Chorioamnionitis
  - Diabetes
  - FSE and/or IUPC
  - Long labor with multiple SVE
  - Obesity
  - Postpartum hemorrhage
  - Preterm birth
  - PROM
  - Retained placenta
  - Smoking

Burrows LJ et al 2004

Endometritis cont….

- Differential Diagnosis
  - Surgical site infection, mastitis, UTI, DVT, aspiration pneumonia

- Signs and Symptoms:

  - Fever ≥ 38* on any two days excluding the first 24 hours
  - Foul smelling lochia
  - Elevated WBC count (> 20,000 mm^3)
  - Tachycardia
  - Malaise, anorexia
  - Chills associated with spike in temperature

Endometritis cont….

- Broad spectrum antibiotics that include coverage for both anaerobic and aerobic bacteria
- Gold standard is IV Gentamicin and Clindamycin
  - 900 mg Clinda q 8 hrs, 1.5 mg/kg Gentamycin q 8 hrs
- 90% of women will have resolution of fever in 48-72 hours

Karsnitz DB 2013

Endometritis cont….

- If no resolution of fever in 48-72 hours consider complications:
  - Pelvic abscess
  - Septic thrombophlebitis
  - Rarely: resistant bacteria or drug fever

- Treatment is considered successful when
  - Afebrile for 24 hours if vaginal birth
  - Afebrile for 48 hours if cesarean section

Karsnitz DB 2013, Black LP 2012

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Endometritis: Nursing Actions

- Check for drug allergies prior to administering antibiotics
- Observe for signs of septic shock:
  - Tachypnea, hypotension, tachycardia, oliguria
- Tylenol for fever prn

Endometritis: Nursing Actions

- Increase PO fluids
- Administer oxytoxics as ordered to facilitate uterine drainage
- Keep mother and baby together as much as possible
- Prevent breast engorgement

Postpartum Case Study

- G3 P1, two days after emergency cesarean for fetal intolerance to labor

- On your initial assessment in the morning:

  - Afebrile, vital signs stable, lungs are clear
  - Dressing dry and intact, bowel sounds in four quadrants
  - Fundus firm midline and below umbilicus
  - Lochia normal

Postpartum Case Study

You take out her IV and help her get up to take a shower

- As she returns from the bathroom she says her leg hurts
- On exam you note redness in one leg
- What do you think?
- What do you do next?

Thrombophlebitis

- Definition: Inflammation of a vein with formation of a thrombus
- Superficial phlebitis:
  - Common, benign, and not associated with pulmonary embolism
  - Visible, often in varicose veins
  - Hard , painful area along affected vein
- DVT
  - Pain, redness, and edema but a vein is not visible. Redness and edema is widespread
  - Associated with a risk for pulmonary embolism

Deep Vein Thrombosis (DVT)

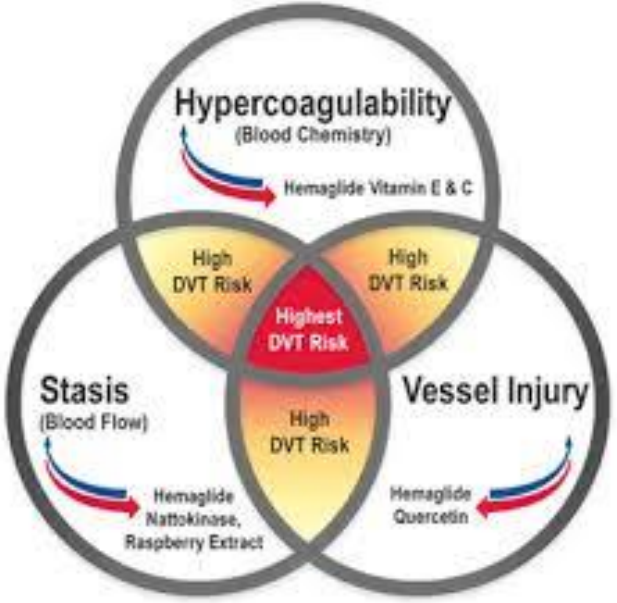
- What is it?
  - Inflammation of a peripheral vein with development of a thrombus
  - Best understood as the activation of coagulation in areas of reduced blood flow

- Incidence has decreased with early ambulation in the PP period

James AH 2008, Jackson E 2011

Deep Vein Thrombosis (DVT)

- Pregnancy predisposes to DVT due to:
  - Venous stasis from enlarge uterus compression, and decreased vascular tone
  - Hypercoagualibility
  - Remember Virchow's triad?
    - Hypercoaguability
    - Stasis of blood flow
    - Endothelial injury



James AH 2008, Jackson E 2011

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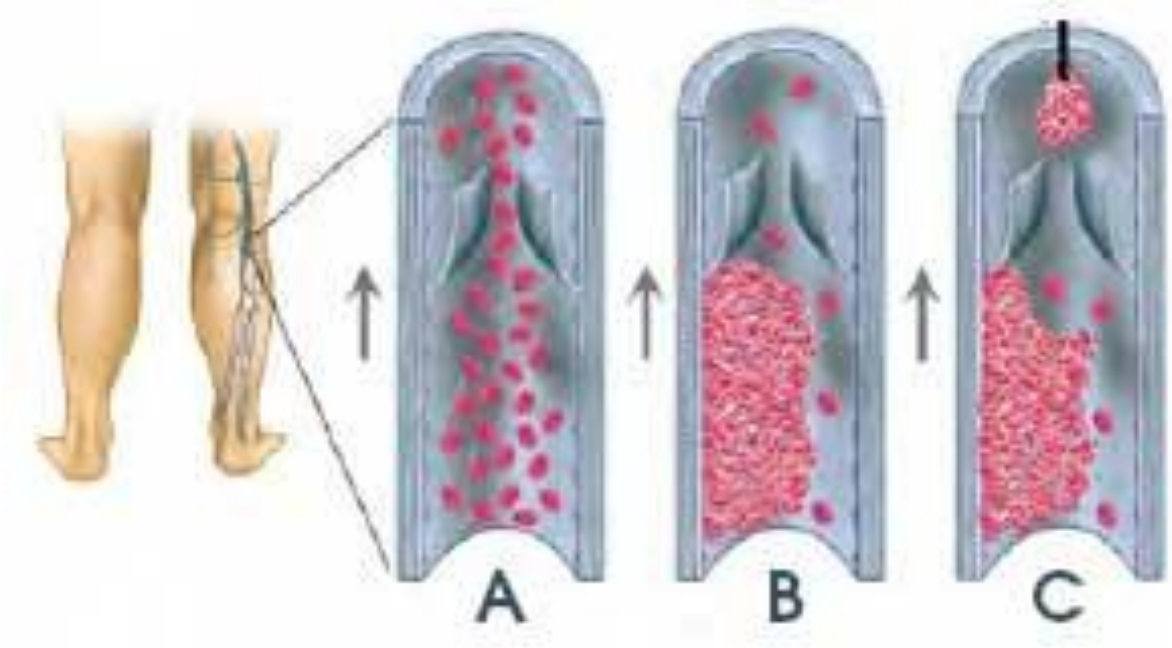
Deep Vein Thrombosis (DVT)



A. Normal Blood Flow

B. Deep Vein Thrombosis

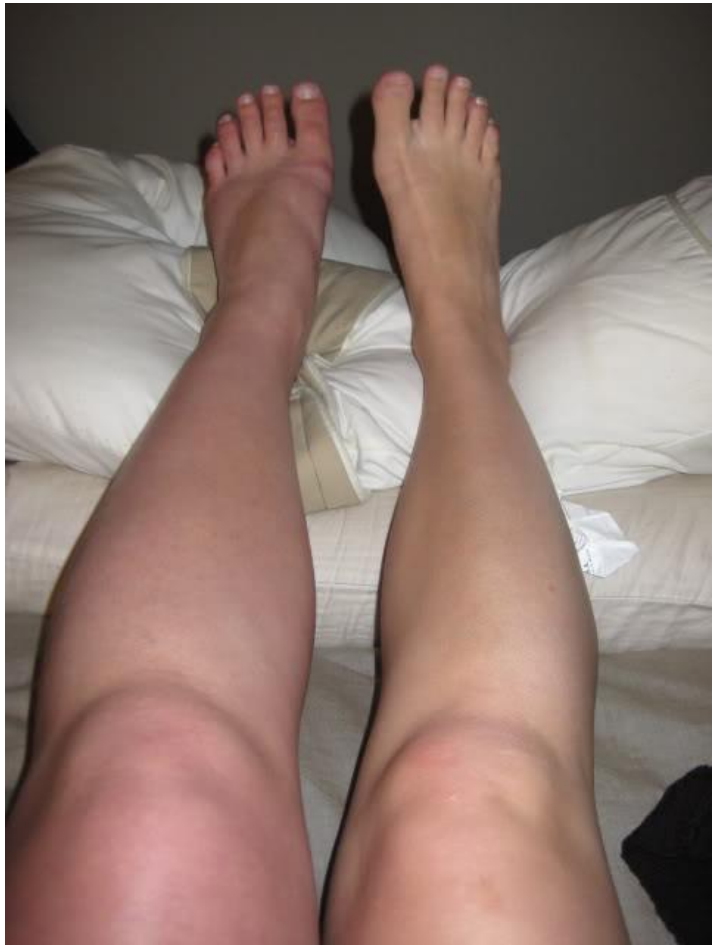
C. Embolus

Risk Factors for DVT

- Maternal risk factors:
  - Obesity
  - Smoking
  - Hx of thromboembolism
  - Diabetes
  - Age > 35 years
  - OCP when not pregnant
- Pregnancy risk factors
  - Multiparity
  - Preeclampsia
  - Physiologic changes of pregnancy

Risk Factors for DVT

- Labor risk factors
  - Cesarean birth
  - PPH
  - Infection
  - Immobilization



Superficial Thrombophlebitis versus DVT

Signs and Symptoms of Superficial Thrombophlebitis

- Leg pain
- Localized heat
- Tenderness
- Knot or cord to palpation
- Inflammation at the site

Superficial Thrombophlebitis versus DVT

Signs and Symptoms of DVT

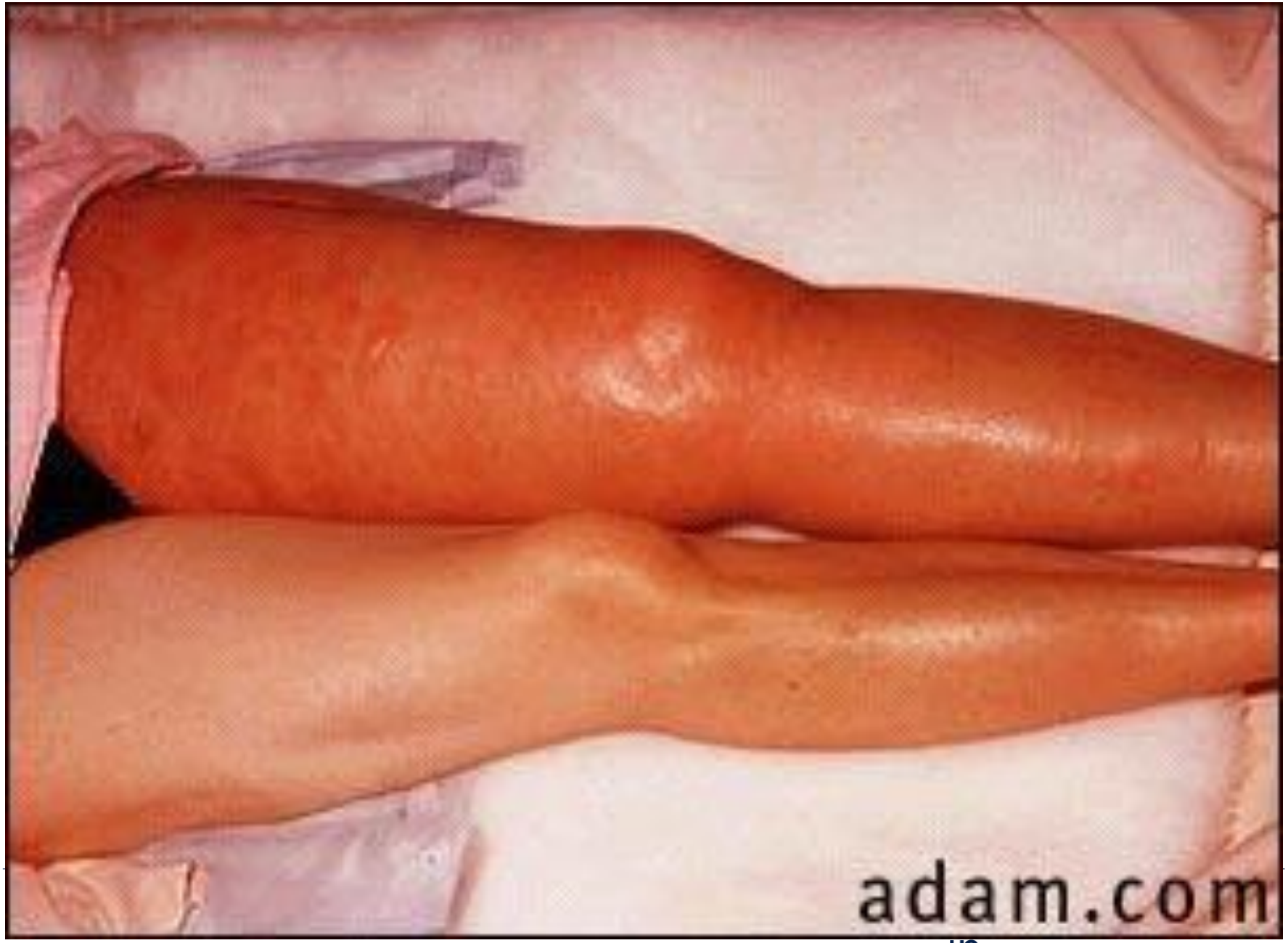
- Possible temp elevation
- Mild tachycardia
- Abrupt onset with severe pain that worsens with walking or standing
- Generalized edema of leg
- Pain with pressure on calf
- Tenderness along the entire course of the involved vessel
- Possible palpable cord

DVT cont…

- Unilateral edema and increase in leg circumference (More often left leg than right)
- Tenderness--usually confined to the calf muscles or over the deep veins in the thigh
- The pain and tenderness does not correlate with the size, location, or extent of the thrombus
- Warmth or erythema of skin may be present over the area of thrombosis

DVT cont…

- Homan's sign: Discomfort in the calf muscles on forced dorsiflexion of the foot with the knee straight
  - This sign is present in less than one third of patients with confirmed DVT
  - It also is found in more than 50% of patients without DVT. It is therefore very nonspecific


adam.com

DVT cont…

- Prevention
  - Early ambulation
  - Antiembolic stockings
- Diagnosis
  - Doppler ultrasound: Better at predicting iliac and femoral DVT and less effective in predicting DVT in calf veins

Superficial Thrombophlebitis Treatment

- Treatment:
  - Analgesia as needed
  - Leg rest
  - Ambulation is usually OK
- Nursing Actions
  - Warm packs to affected area
  - Slight elevation of leg
  - Supportive stockings

DVT Treatment

- Treatment:
  - IV Heparin then Warfarin X 6 weeks
  - Analgesia as needed
  - Leg rest, Ambulation when acute symptoms resolve
- Nursing Actions
  - Warm packs to affected area
  - Slight elevation of leg
  - Supportive stockings
  - Carefully assess other signs of bleeding
  - Have heparin antidote available
  - Extensive teaching about warfarin will be needed

Any questions before our bridge to EBP…?

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Objectives

- Physiology and Assessment
  - Postpartum Physiologic Changes
  - Normal Lab Values During the Postpartum Period
  - Postpartum Assessment and Care

- Evidence-Based Care Practices
  - Delayed Cord Clamping
  - Skin-to-Skin care
  - Early Initiation of Breastfeeding

Delayed Cord Clamping

- Delay of 60 seconds or more before the umbilical cord is clamped and cut
  - Results in transfusion of approximately 83-110 mL of blood

- Associated with:
  - Less anemia at 4-6 months, ↑ iron stores
  - ↓ rates of NEC, IVH
  - Stem cell transfusion
  - More benefits for preterm infants

McDonald SJ 2013, Rabe H 2012, ACOG 2012

After delayed cord clamping…

Delayed Cord Clamping

- Recommended by ACOG and AAP for all newborns, especially preterm infants
- Nursing actions:
  - Provide dry place for placement of newborn at or below level of placenta
  - Assess and dry infant while waiting for the cord to be clamped, document time cord clamped
  - Move to skin-to-skin contact after cord is clamped

Schean P 2014

Skin-to-Skin Contact

- Early, continuous, and prolonged contact between a newborn and mother in which the naked infant is placed upright on the mother's chest. The infant's head is covered with a cap and the mother-infant dyad are covered with a warm blanket

- Recommended by the World Health Organization for all infants regardless of gestational age or birth weight

Moore ER 2012, WHO 2003

The Golden Hour

Skin-to-Skin Contact

- Multiple randomized trials have found skin-to-skin contact associated with:

  - Improved breastfeeding at 1-4 months
  - Increased breastfeeding duration
  - Improved maternal-infant attachment scores
  - Newborn attains heart rate and temperature stability better
  - Newborn's have lower salivary cortisol levels
  - Less newborn crying
  - Positive effects are more dramatic for preterm infants in the NICU

Moore ER 2012

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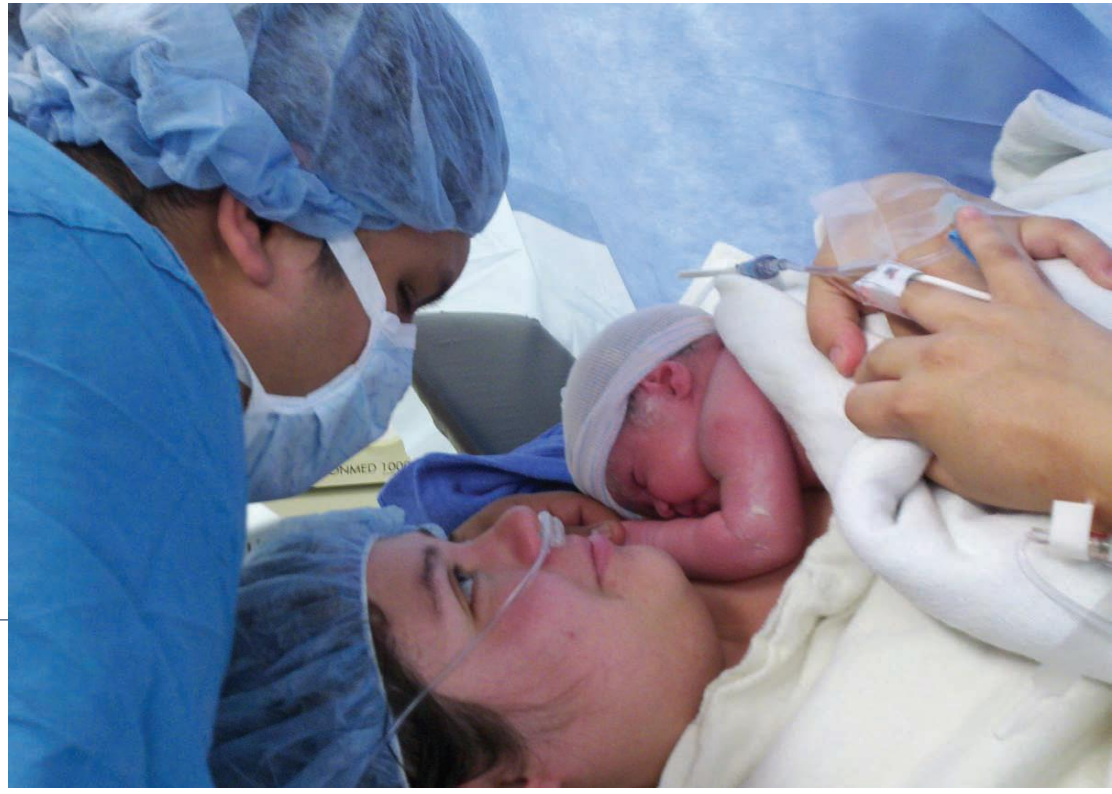
Skin-to-Skin Contact

- Can be performed in the operating room after cesarean section and is beneficial for maternal-infant adaptation



Hung KJ 2012, Stevens J 2014

Early Initiation of Breastfeeding

- First breastfeeding in the first hour after birth
  - At this time the newborn is alert and has better muscle control, able to root and suck

- Breastfeeding in the first hour after birth is associated with:

  - Improved duration of breastfeeding
  - Increased likelihood of exclusively breastfeeding at 2-4 weeks after birth
  - Less blood loss (maternal)

Early Initiation of Breastfeeding

- Nursing actions:
  - Position newborn so his or her chin presses into the breast when they open their mouth
  - Leave undisturbed and let the infant find the breast
  - On average, newborns begin feeding at approximately 20 minutes after birth
  - Avoid holding the back of the infant's head and forcing attachment to the nipple

Thank you for your attention!

It is my pleasure to collaborate with Valerie Huwe and teach for Perinatal Outreach.

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