Preterm Labor
Placental Disorders

Aly Willard, MSN, RNC-OB, C-EFM

aly_willard@hotmail.com

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Preterm Labor
Definition

Labor or birth occurring before 37 completed weeks

- Late Preterm: 34.0 – 36.6 weeks
- Moderately preterm: 32 – 33.6 weeks
- Very preterm: 28 – 31.6 weeks
- Extremely preterm: <28 weeks

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Preterm Labor

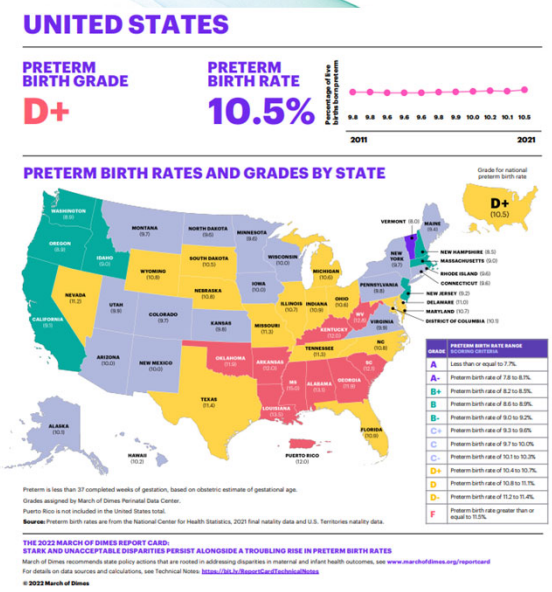
Statistics

US Preterm birth rate ↑

- 10.5% in 2021
- Report card: D+

US Infant mortality ↓

- 2019: 5.6/1000
- 2020: 5.4/1000



MOD Report Card

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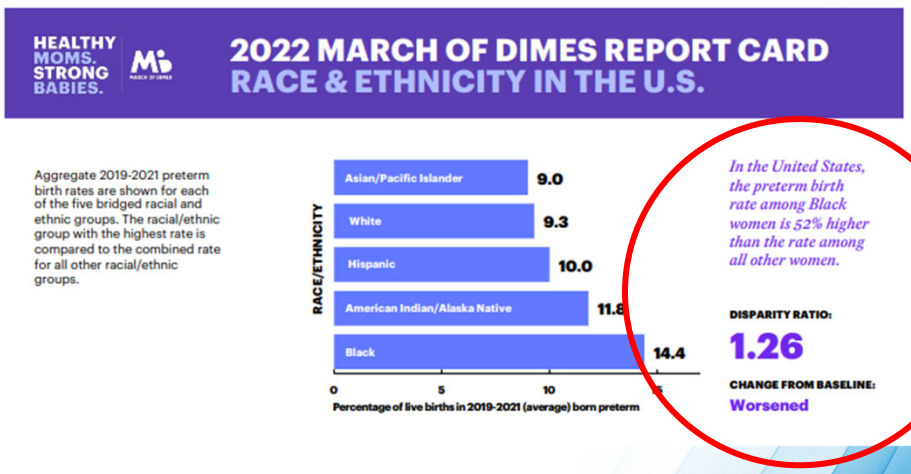
Preterm Labor

Statistics



MOD Report Card

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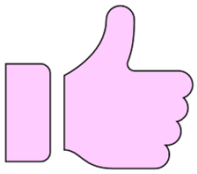
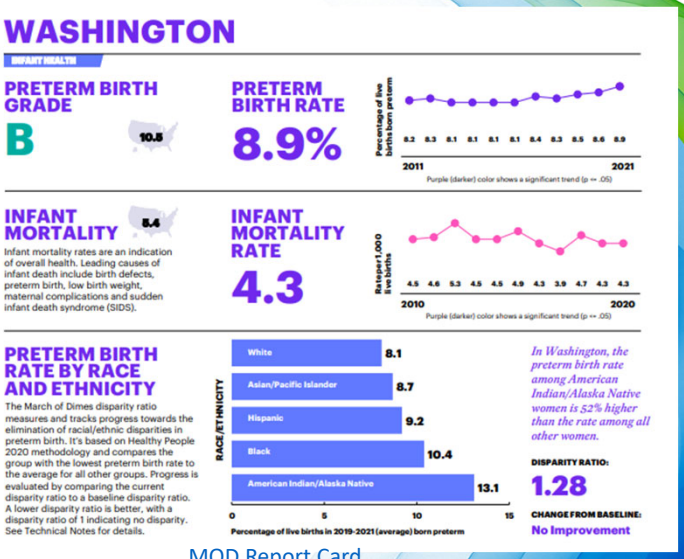
Preterm Labor

Statistics





MOD Report Card

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Preterm Labor

Risk Factors

- History of spontaneous PTL/PTB
  - *15-50% recurrence
- Shortened cervix
- Multiple gestation
- Non-Hispanic Black race
- Uterine anomalies
- Short interpregnancy interval
- < 17 and > 35 years of age
- Genetics

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Preterm Labor

Medical Indication ~ 25%

- Preeclampsia
- Uncontrolled diabetes
- Placental abnormalities
- IUGR
- Infection
- PPROM
- Fetal anomalies
- ART

And the list goes on…..

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Preterm Labor

Symptoms

(23.0 – 33.6 weeks)

- Pelvic pressure
- Backache
- Regular uterine contractions on external tocometry
- Increased vaginal discharge
- Leakage of fluid
- Vaginal spotting/bleeding

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Preterm Labor

Evaluation

- Fetal wellbeing
- SSE – FFN
- GBS culture
- Consider wet prep
- R/O ROM
- SVE – after other tests

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Preterm Labor

Diagnostic Criteria

Fetal Fibronectin

- Protein produced in uterus → vaginal secretions
- Normal 16-19 weeks, then disappears
- Detected 1 week before onset of PTL

What can affect results?

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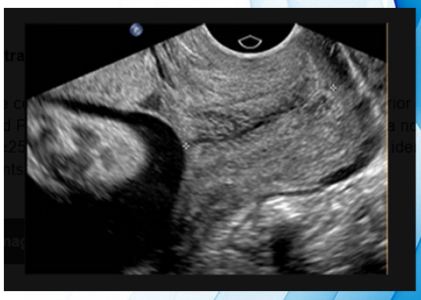
Preterm Labor

Diagnostic Criteria

Transvaginal ultrasound for cervical length

- Indicator of PTB
- Normal:
  - CL does not change 14-28 weeks
  - < 22 weeks ≈ 40 mm
  - 22-32 weeks ≈ 35 mm
  - > 32 weeks – avg 30 mm
- ≥ 25 mm – <u>low risk</u>



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Preterm Labor

Admission

Nursing Considerations

- Antenatal steroids
- Tocolysis
- Antibiotics for GBS prophylaxis
- Magnesium sulfate for neuroprotection
- NICU consult
- Treat any infections
- Continuous fetal monitoring

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Preterm Labor

Management

Magnesium Sulfate	
Dosage: 4-6 gm IV bolus initially, then 2-4 gm/hr	
Indications: Tocolysis, neuroprotection for premature infants, seizure prophylaxis	**Contraindications:** Myasthenia gravis, hypocalcemia, renal failure
Birthing person side effects: Pulmonary edema, flushing, headache, N/V, lethargy, muscle weakness, hypotension	**Fetal/Neonatal side effects:** • Decrease FHR variability • Neonatal depression • Hypotonia

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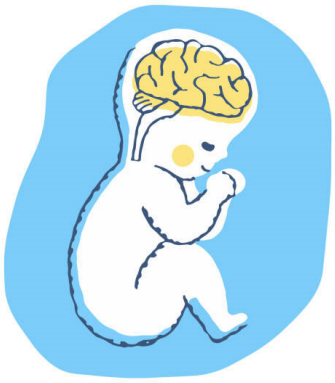
Preterm Labor

Management

Neuroprotection

- ↓severity & risk of CP < 34 weeks
- Mag Sulfate 4 gm bolus, then 1 gm/hr x 24 hours (or until delivery)

  Do NOT continue after delivery



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Preterm Labor

Management

Terbutaline	
Dosage: 0.25 mg SQ	
Indications: Tocolysis – PTL/tetanic contractions	**Contraindications:** Tachycardia-sensitive maternal cardiac disease, uncontrolled diabetes mellitus, seizure disorder, hyperthyroidism
Birthing person side effects: Tachycardia, SOB, chest pain or pressure, hyperglycemia, hypokalemia, bronchospasm, hypotension, flushing, pulmonary edema, cardiac insufficiency, N/V	**Fetal/newborn side effects:** Fetal tachycardia, fetal hyperglycemia or hyperinsulinemia, neonatal hypoglycemia, hypocalcemia, hypotension

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Preterm Labor

Management

Nifedipine	
Dosage: 20-30 mg PO then 10-20 mg PO every 4-6 hours, maximum daily of **160 mg**	
Indications: Tocolysis	**Contraindications:** Cardiac disease, renal disease, hypotension
Birthing person side effects: Flushing, headache, dizziness, nausea, transient hypotension, pulmonary edema	**Fetal/newborn side effects:** FHR decelerations d/t hypotension

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Preterm Labor

Management

Indomethacin	
Dosage: 50 mg PO loading dose, 25-50 mg every 6 hours x 48 hours	
Indications: Blocks prostaglandins to stop PTL	**Contraindications:** > 32 weeks gestation, gastritis, asthma, thrombocytopenia, NSAID sensitivity, oligohydramnios, renal failure (BP or fetus), fetal cardiac anomaly, IUGR
Birthing person side effects: Headache, nausea, vomiting	**Fetal/newborn side effects:** Ductus arteriosus constriction post 30-32 weeks' gestation, decreased renal output, decreased AFI if prolonged use (>3-7 days), pulmonary hypertension

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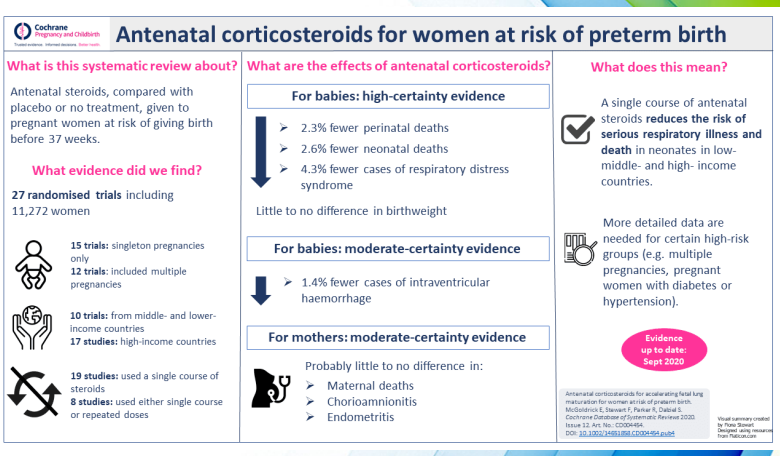
Preterm Labor

Management

Antenatal steroids:

- ↑ surfactant
- ↓ RDS, IVH, mortality
- Regimen:
  - Betamethasone 12 mg IM q 24˚
  - Dexamethasone 6 mg IM q 12˚



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Preterm Labor

Can it be prevented?

- Cerclage
- Pessary
- Progesterone -Makena
  - Vaginal progesterone??
- Bed rest
- IV hydration
- Prenatal care/education

SMFM.org Preterm Birth Toolkit
FDA-Makena

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Placenta Disorders

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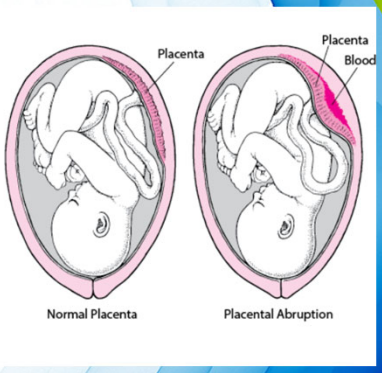
Placental Disorders

Placental Abruption

- Separation of the placenta from uterine wall
- US Incidence: ≈ 0.5% to 1% of all pregnancies
  - Risk of recurrence - 5.8%
- Cause unknown
- Risk factors
  - Previous abruption
  - Trauma
  - Substance use
  - PPROM
  - Hypertension



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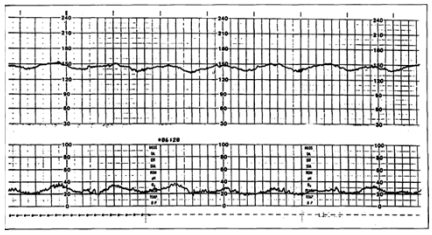
Placental Disorders

Placental Abruption

- Manifestations
  - Sudden-onset, intense pain
  - Bleeding – "port wine"



- Contractions
  - Preterm
  - Labor – low amplitude, high freq
- N/V
- Rapid labor progress
- DIC

Is a C/S always necessary?

www.jognn.org

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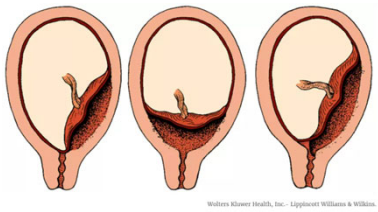
Placental Disorders

Placenta previa

- Abnormal implantation near/over cervix
- Painless uterine bleeding
- Incidence: 0.3-0.5%



Risk factors

- Previous placenta previa/ cesarean
- Suction & curettage
- Multiparity
- Advanced maternal age (>35 years)
- Cigarette smoking
- Nonwhite race (all)

Complications

- Abruption
- Hemorrhage
- IUGR
- Accreta (PAS)

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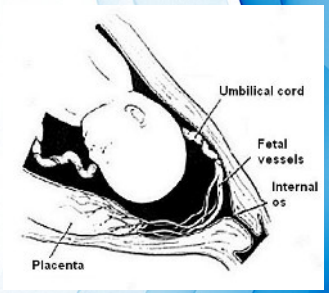
Placental Disorders

Vasa Previa

- Unprotected vessels run through amniotic membranes/pass over cervix
- Incidence: 1/2500 births
- Risks:
  - Rapid maternal/fetal hemorrhage
  - ↓ fetal blood supply
- Placenta does <u>not</u> need to be over cervix
- Two types:
  - I – Velamentous
  - II – Succenturiate lobed/multi-lobed
- Delivery: 34-37 weeks



https://vasaprevia.com/

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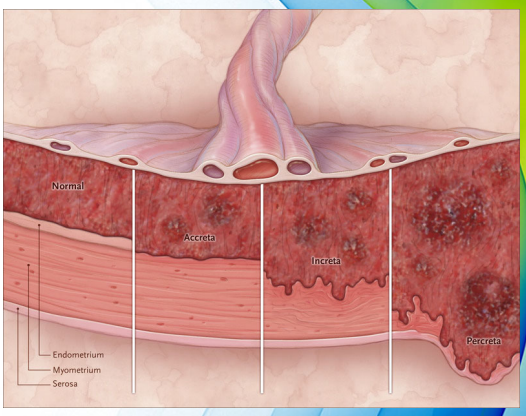
Placental Disorders

Placenta Accreta Spectrum (PAS)

- Types
  - **Accreta** (75-80%) – myometrium
  - **Percreta** (5-7%)– uterine wall, myometrial circulation
  - **Increta** (15-18%) – through uterus to organs
- Risks
  - Prior uterine surgery
  - Placenta previa
  - ART
  - Hx D&C
- Incidence - ↑ with each C/S
- ↑ risk hemorrhage
- Delivery: 34-37 weeks



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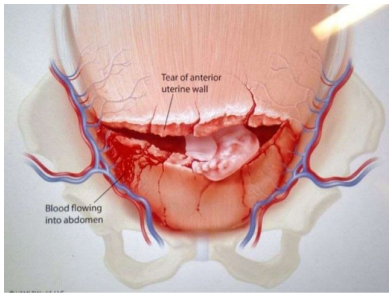
Placental Disorders

Uterine rupture



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Causes
- Trauma
- Prior uterine surgery

Signs & symptoms
- New onset of intense uterine pain
  - "Tearing at incision"
- Fetal bradycardia
- Weakening contractions
- Vaginal bleeding
- Loss of fetal station
- Signs of shock or hemorrhage
- Hematuria

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Placental Disorders

Uterine rupture

"Sudden & Catastrophic"

Sequelae

- PPH
- Blood transfusion
- Hypovolemia /shock
- Bladder/bowel/ureter injury
- Extrusion of baby/placenta through uterus
- GA

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Knowledge Check!

Q: The tocolytic that places the birthing person most at risk for diabetic ketoacidosis is:

a. Nifedipine
b. Magnesium sulfate
c. Terbutaline

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Knowledge Check!

Q: The placental condition in which the fetal blood vessels run through the amniotic membranes and are present at the cervical os:

a. Placenta previa
b. Vasa previa
c. Velamentous cord insertion

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Knowledge Check!

Q: The greatest risk of tocolytic therapy for a patient in PTL with a twin pregnancy:

a. Hyperglycemia
b. Rupture of membranes
c. Pulmonary edema

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Take a break!!!

See you back in 10 minutes…

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Physiology of Labor

Pain Management & Coping

Aly Willard, MSN, RNC-OB, C-EFM

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Physiology of Labor

Characteristics of true labor

- ☑ Regular uterine contractions
- ☑ Cervical change
  - Dilation
  - Effacement

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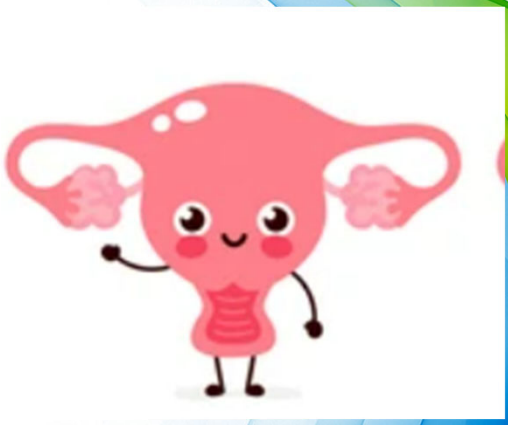
Physiology of Labor

Uterus

- Uterine wall
  - 3 layers - flexible
  - Myometrium
    Quiet → Active
  - Upper vs lower

Cervix

- Connective tissue
- Firm → dilated/effaced



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Physiology of Labor

Labor process

Birthing person factors

- ↑ Prostaglandin
- Ferguson's reflex
- Oxytocin receptors
- ↓ Progesterone

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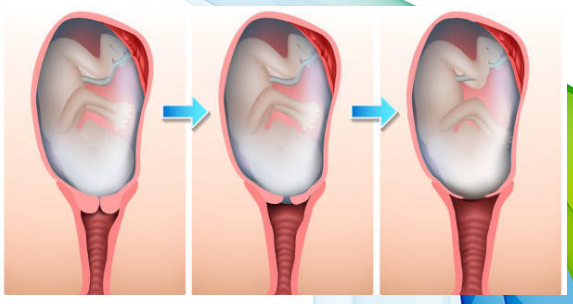
Physiology of Labor



Labor process

Fetal Factor

- Placenta aging
- Pituitary activation (HPA)
  - ↑ corticotropin-releasing hormone (CRH)
  - ↑ cortisol (adrenals)
- Fetal membranes
  - ↑ Prostaglandins

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Physiology of Labor

Four P's

Passage

- Pelvis
- Cervix

Passenger

- Fetal head size
- Attitude, lie, position

Powers

- Contractions
- Pushing

Psyche

- Physical, emotional preparation
- Previous birth experience
- Culture
- Support

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Assessment & Management of Labor

General Assessment

- Physical assessment (initial/ongoing)
- Abdominal
  - Size, shape, Leopold's
  - Contractions – strength, duration, frequency
  - FHR
- Vaginal
  - Cervical assessment
    - Contraindications: Bleeding or ROM
    - Frequency
- Psychosocial
  - Coping & support
  - Education

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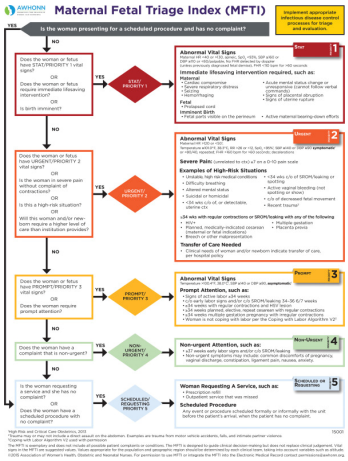
Assessment & Management of Labor

General Assessment



Source

Maternal Fetal Triage Index (MFTI)

- Triage tool
- Reduces delay of care & variability
- Based on birthing person/fetus condition
- Timely treatment

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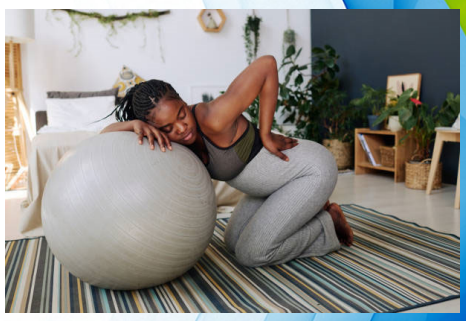
Assessment & Management of Labor

Stages of Labor

First Stage: Latent Phase

- Characteristics
  - Onset of regular contractions
  - Contractions mild-moderate
  - Cervical effacement
  - 0-5 cm
- Nursing care
  - Encourage ambulation
  - Education
  - Non-neuraxial anesthesia



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Assessment & Management of Labor

Stages of Labor

First Stage: Active Phase

- Characteristics
  - Starts when cervix is ~5-6cm dilation
  - Ends when cervix is complete (10 cm)
  - Contractions palpate mod-firm
- Nursing support & responsibilities
  - Comfort -1:1 care, Epidural
  - Assessments
  - Monitor progress

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Assessment & Management of Labor

Stages of Labor

Second Stage

- Characteristics
  - Starts at 10 cm dilation → birth of baby
  - Increased bloody show, rectal pressure, N/V
- Nursing support & interventions
  - Laboring down vs pushing
  - Hydration
  - Frequent position changes
  - Assess descent
  - Coached pushing – open or closed-glottis?
  - FHR/uterus

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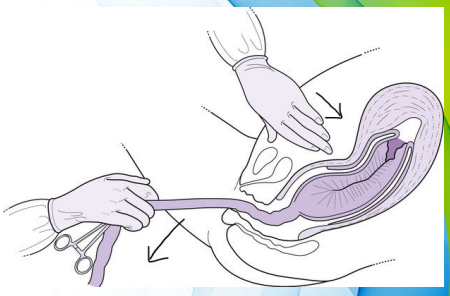
Assessment & Management of Labor

Stages of Labor

Third Stage

- Characteristics
  - Birth of baby → delivery of placenta
  - Mild uterine contractions
- Support interventions
- Nursing responsibility



Source

Active Management (AMTSL)-3 components

- Pitocin after delivery of baby
- Cord traction
- Uterine massage

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Assessment & Management of Labor

- Out with the OLD: Friedman curve
- In with the NEW: Zhang
  - Parity
  - Patient characteristics
  - Labor at 6 cm

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Obstetric & Perioperative Procedures

Version (ECV)

- Indications
  - Breech or transverse (3-4%)
- Contraindications
  - Placenta previa
  - Multiple gestation
  - Engaged presenting part
  - Non-reassuring FHR
  - Uterine anomalies
  - IUGR
  - Ruptured membranes
- Complications
  - Cord compression
  - Abruption
- Nursing responsibilities
  - Fetal monitoring and assessment
  - IV
  - Terbutaline
  - Coping

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Obstetric & Perioperative Procedures

Episiotomy

- **Surgical enlargement of the posterior wall of the vagina just prior to birth**

Indications
- Routine use –no data
- Emergent vaginal delivery
- Shoulder dystocia

Complications
- Increased 3˚ & 4˚ lacs
- Delayed healing
- ↑ blood loss
- ↑ pain

Nursing responsibilities
- Positioning
- Spontaneous pushing

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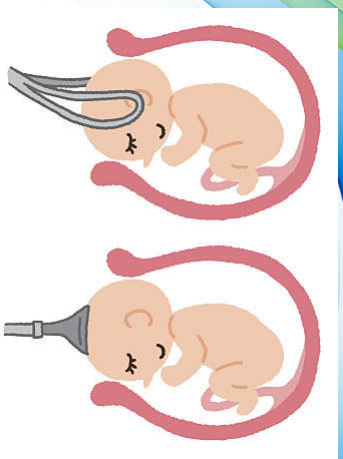
Obstetric & Perioperative Procedures

Operative Vaginal Delivery

Indications
- Fetal distress
- Maternal fatigue
- Rotational

Contraindications
- VE prior to 34 weeks – risk of IVH



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Obstetric & Perioperative Procedures

Operative Vaginal Delivery

➢Nursing responsibilities
- Ensure informed consent
- Empty bladder
- Adequate pain relief
- Documentation

➢Complications
- Obstetric hemorrhage
- Laceration
- Fetal skull abrasions/lacs
- Cephalohematoma
- Subgaleal hemorrhage/hematoma

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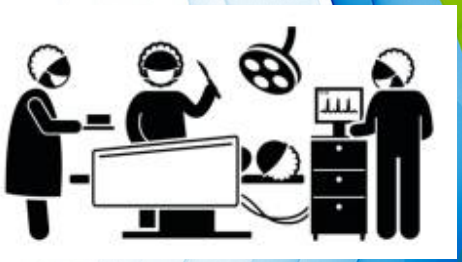
Obstetric & Perioperative Procedures

Cesarean Birth

Indications
- Contraindication to vaginal birth
- Fetal distress
- Labor dystocia

Complications
- Anesthesia
- Hemorrhage
- Infection
- DVT
- Future pregnancy



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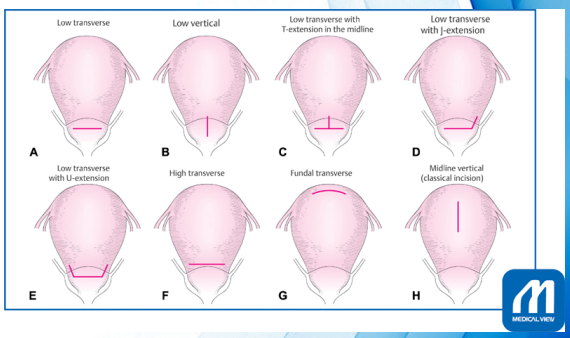
Obstetric & Perioperative Procedures

Cesarean Birth

Types of Incisions

- Pfannenstiel skin incision/low transverse (uterus)
- Vertical – "Classical"
  - Closure
  - Cosmetic consideration
  - ↑ dehiscence
  - ↑ post-op pain



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Obstetric & Perioperative Procedures

Cesarean Birth

Post-anesthesia Care

- PACU standards

Nursing Interventions/support

- Pharmacological/non-pharm interventions
- Maintain normothermia
  - Pre- and post-warming
- Breastfeeding support
  - Support skin-to-skin in OR
- Vaginal prep prior to cesarean
  - Best-practice - ↓ wound infection

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Obstetric & Perioperative Procedures

Vaginal Birth after Cesarean Birth (VBAC) or
Trial of Labor after Cesarean (TOLAC)

- Indications
  - More babies
  - ↓ C/S risks
  - Labor/birth experience
- Contraindications
  - Vertical/"T" incision
  - Hx uterine rupture
  - Hx myomectomy
- Probability calculator

Who's a good candidate??

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Obstetric & Perioperative Procedures

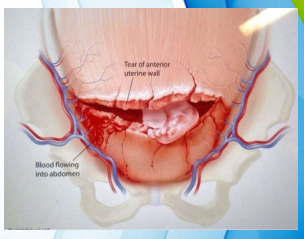
Vaginal Birth after Cesarean Birth (VBAC) or
Trial of Labor after Cesarean (TOLAC)

Complications

- Uterine rupture
- Intrapartum cesarean

Nursing Interventions/support

- Signs of uterine rupture
- Know your hospital policy/procedure
- Anesthesia consult
- No prostaglandins!



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Obstetric & Perioperative Procedures

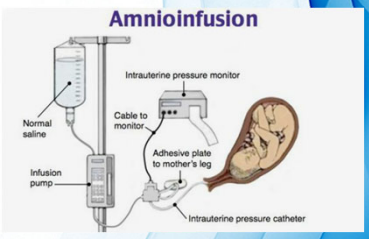
Amnioinfusion

Indications

- Problems with ↓ amniotic fluid
  - FHR variables

Contraindications

- Vaginal bleeding
- Uterine anomalies
- Active infection (HIV, HSV)
- ? TOLAC



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Obstetric & Perioperative Procedures

Amnioinfusion

Procedure

- IUPC placed
- Fluid infused into uterus (LR or NS)
  - Bolus → maintenance infusion
- Assess fluid return

Complications – Overdistension

- Abruption, pressure on diaphragm

Nursing care

- Uterine resting tone
- Observe fluid return
- Assess birthing person/fetal response
- Documentation

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Pain Management & Coping

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Labor Support

An intentional act of **caring** to assist birthing people during labor and birth

Continuous labor support

- ↓ length of labor
- ↑ rate of spontaneous vaginal birth
- ↓ C/S rates
- Improved neonatal outcomes
- ↓ assisted vaginal delivery
- Less pain medication use
- Greater satisfaction with birth

**not rocket science

Supports physiologic birth!!

(Heelan-Fancher & Edmonds, 2021; Zielinski et al., 2016; AWHONN, 2022)

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LABOR SUPPORT FOR INTENDED VAGINAL BIRTH

EVIDENCE-BASED CLINICAL PRACTICE GUIDELINE

TABLE 3 COMPONENTS OF CONTINUOUS LABOR SUPPORT

Physical (Comfort)
- Repositioning
- Birth ball
- Peanut ball
- Rebozo
- Ambulation/movement
- Aromatherapy
- Heat/cold
- Soothing touch
- Massage, counterpressure
- Environmental control (adjusting room temperature, removing distracting noise, using music)
- Encouragement of fluid intake and output
- Breathing and relaxation techniques

Partner
- Educating the partner on labor and birth process
- Engaging the partner in providing comfort techniques

Informational
- Explaining procedures and assisting in making informed decisions
- Giving advice/information on coping methods
- Giving updates on progress of labor
- Bridging communication gaps
- Educating about the labor process

Emotional
- Continuous presence
- Reassurance
- Praise
- Affirmations

Advocacy
- Helping the pregnant person articulate their wishes to others
- Reviewing birth plan (if written)
- Ensuring shared decision making and consent for all procedures

(AWHONN, 2022)

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Supporting Physiologic Birth

Interventions →

- Can be overused or unnecessary
- Can disrupt normal physiologic childbirth
- May start the cascade of further interventions
- Do not always improve health outcomes
- Think…don't automate!

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Pain Management & Coping

- Decisions about pain management influenced by:
  - Culture
  - Background
  - Fear of potential complications
  - Education
- Experience with pain varies
  - Influenced by physiologic and psychological process of birth
  - Pain perception

"Women who are not given a choice in pain relief are three times more likely to recall a negative birth experience." (Hale et al, 2020)

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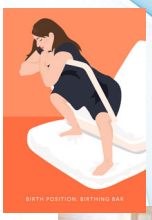
Pain Management & Coping

Non-Pharmacologic Methods

- Relaxation
- Breathing
- Positioning
- Coaching
- Hydrotherapy
- Peanut ball
- Birth ball
- Effleurage

What are your favorites?



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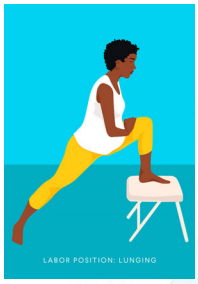

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Pain Management & Coping

Pharmacologic Methods

Inhaled Nitrous Oxide (50/50)

- Tasteless, odorless, colorless, nonflammable
- Rapid onset/clearance
- Provides analgesia – does not take away pain completely
- Freedom of movement
- Patient controlled
- Bonus-use for high-anxiety procedures

Contraindications: Excessive sedation, B12 deficiency

(Hale et al., 2020)

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Pain Management & Coping

Pharmacologic Methods: Narcotics

- Bind to opioid receptors
- Maternal effects
  - ↓ pain and anxiety
  - Adverse side effects: N/V, constipation, resp depression
  - Commonly used: Fentanyl, morphine, nalbuphine, and butorphanol
- Fetal effects
  - ↓ FHR variability & accelerations
- Neonatal effects
  - Early respiratory depression
  - Behavioral and feeding
  - Longer drug excretion

(Hale et al, 2020)

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Pain Management & Coping

Pharmacologic Methods: Regional (Neuraxial)

Epidural/PCEA

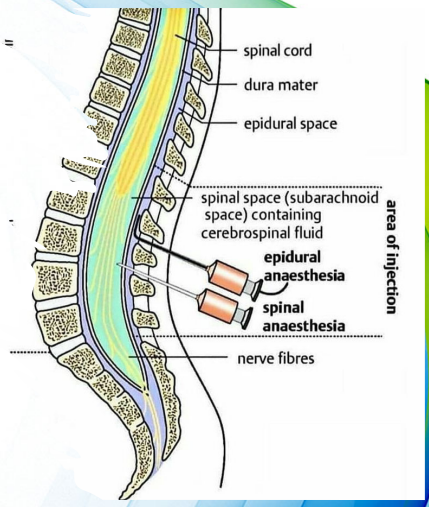
- Catheter - epidural space
- Continuous infusion w/ patient-controlled intermittent doses

Spinal

- Local anesthetic/analgesic injected into the subarachnoid space

Combined spinal & epidural (CSE)

- Injection of anesthetic/analgesic agent into subarachnoid space followed by placement of an epidural catheter in epidural space



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Pain Management & Coping

Pharmacologic Methods: Regional

Complications

- Hypotension
- Unintentional intravascular injection
- High neuraxial block
- Epidural hematoma
- Meningitis

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Pain Management & Coping

Pharmacologic Methods: Regional

Nursing Responsibilities

✓Before procedure:
- Patient education about pain relief options
- Assess fetal status and maternal baseline vitals & labor progress

✓During procedure
- Positioning
- Monitor fetal status and VS

✓After procedure
- Monitor and evaluate effectiveness
- Continuous EFM
- VS, LOC
- Dermatome assessment
- Communicate clinical assessments and change in patient status

✓Pause or stop infusion

✓Remove catheter

Hale et al., 2020; AWHONN, 2020

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Pain Management & Coping

Pharmacologic Methods: Regional

Monitor for signs of **Local Anesthetic Systemic Toxicity (LAST)**

Symptoms
- Ringing in the ears
- Metallic taste
- Hypertension
- Restlessness
- Perioral numbness
- Seizures
- Arrythmias
- Cardiac arrest
- Seizures

Treatment
- Control "symptoms"
  - Cardiac arrest
  - Seizures
- IV lipid emulsion

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Pain Management & Coping

Pharmacologic Methods: General Anesthesia

Indications

- Emergent C/S
- Epidural or Spinal anesthesia contraindicated

Complications

- Birthing person
  - Malignant Hyperthermia
- Fetus
  - Respiratory depression

Nursing Responsibilities

- Assist anesthesia provider
- Cricoid pressure
- Assess NPO status
- Aspiration prophylaxis
- Pain control after surgery

AWHONN, 2020

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Pain Management & Coping

Pharmacologic Methods: General Anesthesia

Malignant Hyperthermia

- Treatment
  - Stop triggering medication
  - Administer dantrolene (Dantrium, Ryanodex)
  - Flush anesthetics
  - Lower body temperature –ice!
  - Correct electrolyte imbalance, arrhythmias

Please Call MH Hotline at:

1-800-644-9737

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Pain Management & Coping

People with Substance Use Disorder

- Treatment is no different than any other condition
- Important: Identify people with SUD
- Clients with SUD:
  - Higher instances of trauma, ↑ pain intolerance, ↑ pharmacologic pain methods
  - During labor, continue buprenorphine or methadone
    MATs should not be considered adequate for intrapartum pain
  - ↑ opiate tolerance-need higher doses of opioid agonists
  - ↑ sensitivity to painful stimuli

(AWHONN, 2023)

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Pain Management & Coping

People with Substance Use Disorder

Pain during labor:

- All the non-pharmacological options!
- Best pharmacologic options:
  - Epidural or spinal anesthesia
  - Short-acting IV opioid analgesics
    - Morphine, hydromorphone, fentanyl
  - AVOID partial antagonist meds: butorphanol, nalbuphine, pentazocine
    - Can precipitate acute opioid withdrawal

(AWHONN, 2023)

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Knowledge Check!

Q: The goal of neuraxial analgesia is to provide pain relief:

a. By causing a blunting effect decreasing the perception of pain
b. By providing analgesia to the lower vagina, vulva and perineum
c. With as little motor block as possible

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Knowledge Check!

Q: The patient has an IUPC inserted for an amnioinfusion which has been infusing for one hour. The nurse notes there has been no leaking of fluid from the vagina. An appropriate action is to:

a. Discontinue the procedure and notify the provider
b. Reposition the catheter
c. Take no action and continue to monitor the patient

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Knowledge Check!

Q: In a patient attempting a TOLAC, which of the following is contraindicated:

a. Foley bulb insertion
b. Oxytocin
c. Prostaglandin E1

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