

Preterm Labor, PROM & the Management of the Patient on Tocolytics

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Some Babies Are Born Well Before Their Time



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Objectives

- Define Preterm Labor and Preterm Birth.
- Discuss the current preventive approaches to Preterm Labor.
- List the warning signs/symptoms of Preterm Labor.
- Describe the importance of patient education and early intervention as it relates to Preterm Birth Prevention.

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Objectives (cont.)

- Describe the contraindications for tocolytic therapy.
- List the tocolytic drugs utilized to inhibit labor.
- Define Preterm PROM and the risks/benefits of conservative management.

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Definitions

- Preterm Birth (PTB)- Delivery prior to 36+6 weeks gestation & after 23+ weeks gestation.



- Preterm Labor (PTL)- Regular uterine contractions; < 37 weeks and > 20 weeks gestation; with cervical dilation of at least 2 cm OR Change in cervical exam (dilation and/or effacement) on serial exams

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Preterm Birth in the United States

Preterm birth (<37 completed weeks)

- 11.7% of all 2011 live births
 - over 460,000 babies

Late preterm (34 to 36 weeks)

- 8.3% of live births
 - about 328,000 babies

Early preterm (<34 weeks)

- 3.4% of live births
 - about 134,000 babies



National Center for Health Statistics, 1990-2011 Final Natality Data.

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Significance STATISTICS

- PTB accounts for 75% of newborn M&M
- 50-80% with PTL will have PTB
- 50% with PTL have no risk factors
- Recurrence risk is 17-70%



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What Are the Consequences of Preterm Birth?

Health Impact

More than one-third of deaths during the first year of life are attributed to preterm birth-related causes.

Lifelong complications, including:

- cerebral palsy
- developmental delays
- chronic lung and vision problems

Economic Impact

Annually, preterm birth costs:

- An average of \$52,000 per premature infant
- \$26 billion for the U.S.
- Costs include health care, education and lost productivity

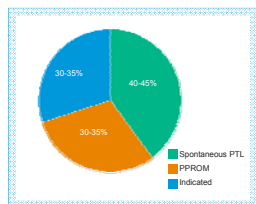
Your Premature Baby: www.marchofdimas.com/baby/premature_index.html. Accessed Jan. 3, 2013.
Population Reference Bureau: www.prb.org/files/2010/prematureinfantinfra.aspx. Accessed Jan. 3, 2013.
Hosain MA, et al for the National Birth Defects Prevention Network. Matern Child Health J 2009;13:164-175



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What Are the Causes of Preterm Birth?

- Spontaneous Preterm Labor 40-45%
- Preterm Premature Rupture of Membranes (PPROM) 30-35%
- Indicated 30-35%



Goldenberg RL, et al. Lancet 371:75, 2008b.



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Risk Factors for Preterm Delivery

Greatest risk

- Previous preterm birth
- Multiple gestation
- Cervical or uterine anomalies
- Presence of IFN between 22 and 34 weeks gestation
- Cervix <25 mm long by TVU between 20 and 28 weeks

Lifestyle and environmental risks

- Late or no prenatal care
- Cigarette smoking, drinking alcohol, drug use
- Lack of social support
- Stress
- Long working hours with prolonged standing

Medical risks

- Infections
- Diabetes
- Hypertension
- Thrombophilias
- Vaginal bleeding
- Birth defects
- IVF
- Underweight or obesity
- Short pregnancy interval

Other

- African-Americans and American Indians
- <17 or >35 years of age
- Low socioeconomic status (SES)

Placemán AM, et al. Am J Obstet Gynecol 1997;177:13-6.
Magila LJ and Katz M. N Engl J Med 2010;362:929-35.
Carr-Hill BA and Hall MB. Br J Obstet Gynaecol 1985;92:521-4.
Kristensen J, et al. Obstet Gynecol 1995;86:800-4.

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LABOR is...



the process by which the products of conception are expelled from the uterus. The exact mechanisms that cause labor are not known but it has been hypothesized that there are multiple factors involved.

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Significance ETIOLOGY/THEORIES

Initiation of Term Labor

- ↑ Estrogen and ↓ Progesterone
- Oxytocin Production
- Release of Prostaglandins
- Change in Uterine Blood Flow
- ↑ in Uterine Size

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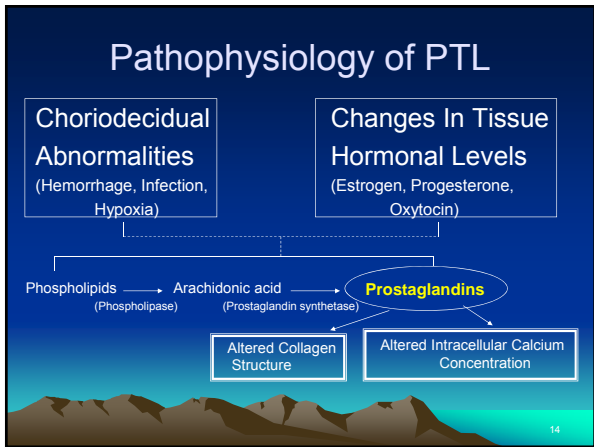
Significance

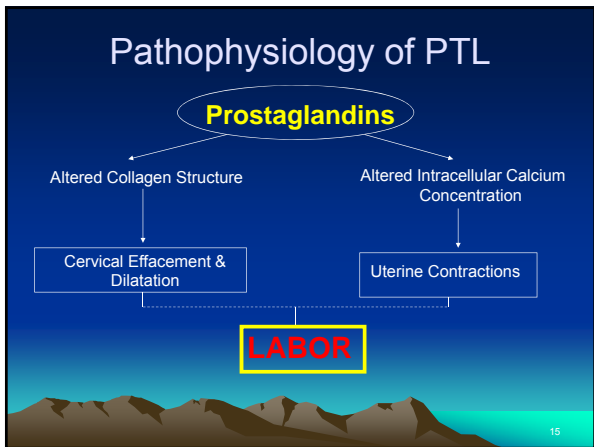
ETIOLOGY/THEORIES

Pathophysiology of Preterm Labor

- Choriodecidual Abnormalities
- Changes in Tissue Hormone Levels

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Significance

PRETERM INFANT COMPLICATIONS

Physiological	Developmental
<ul style="list-style-type: none"> • RDS • IVH • NEC • Temp Instability • Hypoglycemia 	<ul style="list-style-type: none"> • CP • Suck, Swallow, Breathe • Hyper/Hypotonicity • Mental Retardation • Learning Disabilities

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Neonatal Survival Statistics

Weeks of Gestation	Survival %
23 weeks	50 %
24-25 weeks	72-73%
26 weeks	91%
27 weeks	88% **
28 weeks	97% *
29 weeks	99%

UC San Diego (2011) Survival by gestational age

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Significance

PRETERM INFANT COMPLICATIONS

- * The severity of the problem depends on the weight and maturity at birth
- * Special care and hospitalization may be required
- * Tx Goal: Support bodily functions until maturity occurs



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Management Goals

Preterm Birth Prevention

- Ongoing Risk Assessment
- Education
- Close Prenatal Follow-up
- Early/Immediate Intervention



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PTBP Management Goals: Ongoing Risk Assessment

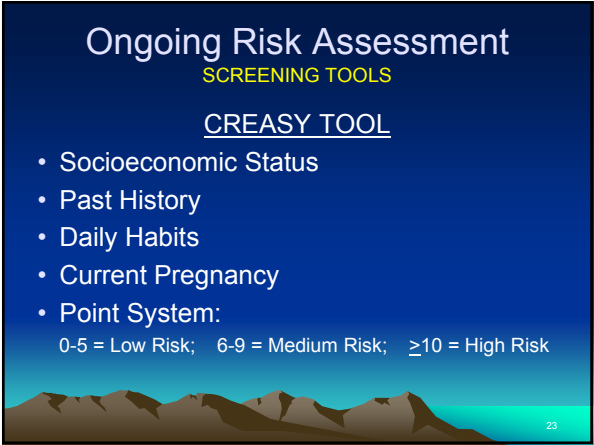
- Screening Tools
 - ✓ Creasy & Modified Creasy Tools
 - ✓ Major & Minor Risk Factor Tool
- Fetal Fibronectin Test



Ongoing Risk Assessment SCREENING TOOLS

CREASY TOOL

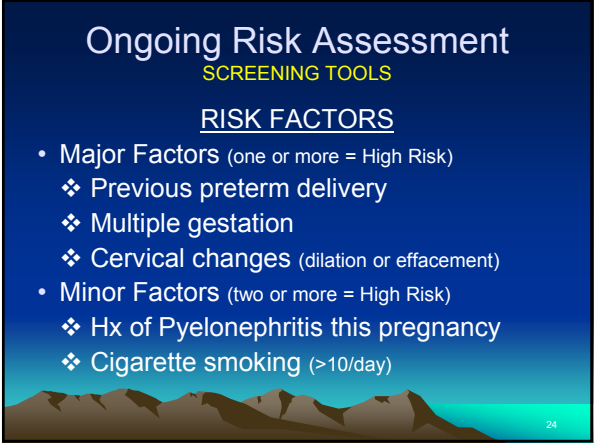
- Socioeconomic Status
- Past History
- Daily Habits
- Current Pregnancy
- Point System:
0-5 = Low Risk; 6-9 = Medium Risk; ≥10 = High Risk



Ongoing Risk Assessment SCREENING TOOLS

RISK FACTORS

- Major Factors (one or more = High Risk)
 - ❖ Previous preterm delivery
 - ❖ Multiple gestation
 - ❖ Cervical changes (dilation or effacement)
- Minor Factors (two or more = High Risk)
 - ❖ Hx of Pyelonephritis this pregnancy
 - ❖ Cigarette smoking (>10/day)



Ongoing Risk Assessment

Fetal Fibronectin test (fFN) Transvaginal Ultrasound (TVU)

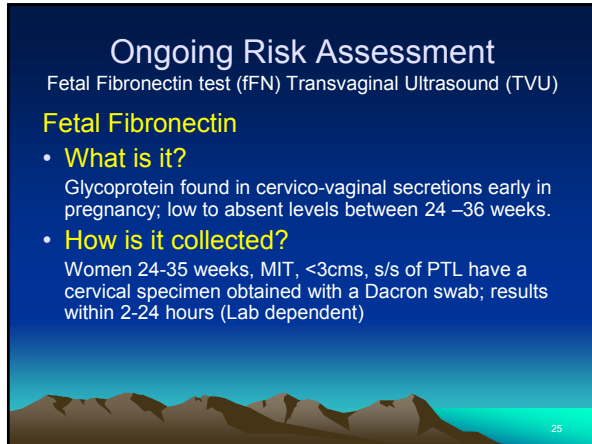
Fetal Fibronectin

- **What is it?**

Glycoprotein found in cervico-vaginal secretions early in pregnancy; low to absent levels between 24 –36 weeks.

- **How is it collected?**

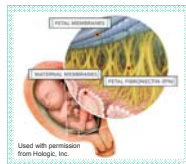
Women 24-35 weeks, MIT, <3cms, s/s of PTL have a cervical specimen obtained with a Dacron swab; results within 2-24 hours (Lab dependent)



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Fetal fibronectin (fFN) Test

- Fetal fibronectin (fFN) is a biomarker screen associated with preterm birth
- In normal pregnancies between 22 to 35 weeks gestation, fFN is generally undetectable in cervico-vaginal secretions
- A positive fFN is associated with increased risk (13%-40%) of delivery within 14 days
- A negative fFN is associated with low risk (0.5%-5%) of delivery within 14 days
- The data of Positive Predictive Value and Negative Predictive Value can assist with risk assessment and provider decision-making regarding risk-appropriate care



Jaino JD, et al. J Obstet Gynecol 1995;173:141-45.
Pascornel AM, et al. Am J Obstet Gynecol 1997;177:13-18.
Letcher H, et al. Am J Obstet Gynecol 1999;180:1169-76.
Adapted from Garber T, et al. Contraception 1996;41:77-83

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fFN — Contraindications and Limitations

- Invalid <24 weeks and >34 weeks
- Sterile speculum exam (SSE) collection is the only FDA-approved collection method
- Vaginal bleeding
- Prior intercourse and/or sterile vaginal exam (SVE) in the last 24 hours
- Cervix \geq 3 cm dilated
- Bulging fetal membranes/PPROM
- Open cervical and/or vaginal lesions

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Transvaginal Ultrasound (TVU)

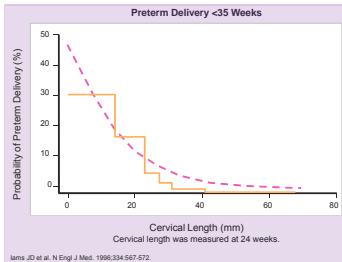
- Cervical length, measured by Transvaginal Ultrasound (TVU), is a biomarker for risk assessment.
- As a negative predictor of preterm delivery: TVU cervical length greater than 25 to 30 mm is widely considered to be low likelihood of preterm birth.
- As a positive predictor of preterm delivery: TVU with “short” cervical length ≤ 20 mm is widely considered to be high risk for preterm birth.

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Transvaginal Ultrasound (TVU)



Image with permission from Nicholas Johns, MD, Santa Clara Valley Medical Center



Iams JD et al. N Engl J Med. 1996;334:567-572.

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TVU — Contraindications and Limitations

- Invalid <15 weeks and >28 weeks
- Steep learning curve — inability to recognize landmarks
- Vaginal bleeding (some instances)
- Central placenta previa
- Excessive probe pressure
- Filled maternal bladder
- Limited access to appropriate TVU equipment and trained staff in some hospitals

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Management Goals

Preterm Birth Prevention

- Ongoing Risk Assessment
- **Education**
- Close Prenatal Follow-up
- Early/Immediate Intervention

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PTBP Management Goals:

Patient Education

- Early Warning S/S of Preterm Labor
- Self Palpation for Uterine Contractions
- Prevention Measures

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Patient Education

Early Warning S/S of Preterm Labor


- Menstrual-like cramps
- Low, dull, or sharp backache
- Pelvic pressure
- Abdominal cramping
- ↑ or change in vaginal discharge
- Leaking “fluid”
- Painless “tightening” or “balling up” of abdomen
- Feeling “Lousy” (Flu-like)

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Patient Education

Self Palpation
(Feel for uterine contractions twice every day for about one hour)

- Urinate then drink 8oz water
- Lie slightly tilted to the side
- Using fingertips, gently press into abdomen
 - ▲ Relaxed – Little resistance
 - ▲ Contraction- Tight or hard over most of the surface
- Measure the frequency of contractions




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Patient Education

Preventive Measures

- Increase Rest Periods
- Decrease Strenuous Activity
- ? Employment Changes ☺
- ? Sexual Activity Changes ☹
- Decrease Stress
- Keep lines of Communication open



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Management Goals

Preterm Birth Prevention

- Ongoing Risk Assessment
- Education
- Close Prenatal Follow-up
- Early/Immediate Intervention



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PTBP Management Goals:

Close Prenatal Follow-up

- MD/CNM office or clinic visits
- Home care visits



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Management Goals

Preterm Birth Prevention

- Ongoing Risk Assessment
- Education
- Close Prenatal Follow-up
- Early/Immediate Intervention

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Interventions That Do Not Reduce Risks of Preterm Birth

ACOG states that the following **do not** appear to reduce the risk of preterm birth and **should not** be routinely recommended for women with signs and symptoms suggestive of preterm labor:

- Bedrest
- Hydration
- Pelvic rest

Behrman, RE, Butler, AS, eds. Preterm Birth: Causes, Consequences, and Prevention. 2006. ACOG Practice Bulletin No. 127. Obstet Gynecol. 2012; 119(6): 1336-17.

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PTBP Management Goals:

Early/Immediate Intervention

Home Management

Modified Bedrest

- ☞ Activity Level
- ☞ Bathroom Privileges
- ☞ Physical Exercise
- ☞ Self Palpation
- ☞ Home Uterine Activity Monitoring
- ☞ Work (inside/outside home)
- ☞ Childcare
- ☞ Sexual Relations

Monitoring Uterine Contractions

Interventions That Do Reduce Risks Associated with Preterm Birth

Standardized preterm labor assessment allows for more accurate and timely interventions.

Preventing preterm birth:

- Progesterone for asymptomatic women with preterm birth risk factors (e.g., prior preterm birth and/or short cervical length measured by TVU)
- Cerclage (for a limited number of special situations)

Preparing for preterm birth can improve outcomes:

- Antenatal corticosteroids
- Short-term tocolytic agents
- Transport to a tertiary care facility

Behrman, RE. *Textbook of Neonatology*. 4th ed. Philadelphia: Elsevier; 2006.
 Meis PJ et al. *N Engl J Med*. 2003;348:2279-2285.
 ACOG Practice Bulletin No 135. *Obstet Gynecol*. 2012;120(4): 964-73.
 ACOG Practice Bulletin No 127. *Obstet Gynecol*. 2012;119(6):1308-17.
 ACOG Committee Opinion 475. *Obstet Gynecol*. 2011;117:422-4.

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PTBP Management Goals:

Early/Immediate Intervention

Hospitalization

- Continuous Electronic Fetal Monitoring
- Modified Bedrest
- Cervical Exam
- Medication Administration
 - ◆ Steroids (Betamethasone or Dexamethasone)
 - ◆ Tocolysis ???

Suppression/Inhibition of PTL

Contraindications

- Intrauterine Demise (IUD)
- Fetal anomaly
- Fetal Distress
- Hemorrhage
- Severe Pre-eclampsia
- “Excessive” cervical dilatation ??
- < 20 weeks gestation ??
- **Preterm PROM ??**

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Preterm PROM

Definitions

- PROM – Premature Rupture Of fetal Membranes prior to the onset of labor, regardless of gestational age;
- **PPROM** - Preterm PROM < 37 weeks gestation;
- Prolonged ROM – Rupture of fetal membranes > 24 hours

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Preterm PROM

Risk Factors

- ↑ Maternal Age
- Prior surgical instrumentation to cervix
- Smoking
- Infection – Chorioamnionitis
- Recent Coitus ???



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Preterm PROM

Incidence

- PROM: 6-12% of all deliveries
- 30% of Preterm Births
- High recurrence risk- 21% in one study
- Most common event leading to admission to NICU

Unfortunately, the etiology is usually unexplained

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Preterm PROM

Pathophysiology

- | | |
|--|--|
| <ul style="list-style-type: none">• Deficiency of Collagenor• Abnormal Collagen in the membranes | <ul style="list-style-type: none">• Localized DeficitsVs.• Generalized Problem |
|--|--|

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Preterm PROM

Complications

- **Oligohydramnios**
 - ☞ Pulmonary Hyperplasia
 - ☞ Limb & Facial Deformities
 - ☞ Umbilical Cord Compression/ Prolapse
- **Chorioamnionitis**
 - ☞ ↑ Maternal O₂ Consumption
 - ☞ ↓ O₂ to the Fetus
- **IUFD**



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Preterm PROM *Management*

The Goal is to develop a plan that will yield a healthy neonate while having the least maternal complication

Conservative Approach
Aggressive Approach

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Preterm PROM *Management*

Conservative Approach
"Observation"

BENEFIT vs. RISK

↓

Increased Gestational Age

↓

Maternal &/or Fetal Infection; Prematurity


It's a Balancing Act

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Preterm PROM *Management*

Aggressive Approach


- Pitocin Induction
- Cesarean Section Delivery



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Preterm PROM

Plan of Care



- Document / Confirm ROM
- Document Gestational Age
- Determine Pathologic Bacterial Infection
- Determine Fetal Lung Maturity
- Detect (early) Developing Infection(s)
- Detect (early) Fetal Compromise

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Preterm PROM

Assessments

(Amniotic Fluid Examination)

1. Confirmation of Diagnosis
 - ◆ Nitrazine testing of vaginal fluid (*ineffective*)
 - amniotic fluid pH is neutral (6.5-7.5)
 - cervical mucous is slightly acidic (5.0-6.0)
 - Urine pH varies (4.5-8)
 - Blood near cervix is neutral (7.4)
 - ◆ Pooling
 - ◆ Ferning (*very sensitive*)
 - ◆ Amnisure

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Preterm PROM

Assessments

(Amniotic Fluid Examination)

2. Fetal Pulmonary Lung Maturity
 - ◆ LS
 - ◆ Presence or absence of PG
3. Bacteria (via amniocentesis)
 - ◆ Gram Stain
 - ◆ Culture
 - ◆ C - Reactive Protein presence

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Preterm PROM

Assessments

(Abdominal Examination)

- Singleton ???
- Presentation of fetus
- Abdominal tenderness
- Uterine irritability/contractions

AVOID DIGITAL EXAMS until delivery
is imminent !!!



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Preterm PROM

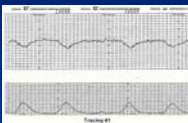

Assessments

(Fetal Monitoring)

- Continuous EFM (FHR & UA)
- Intermittent EFM (FHR & UA)
- Daily NST's
- Fetal Kick Counts

Maternal VS

- Temperature
- Heart Rate



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Preterm PROM

Assessments

(Serial Ultrasound Exams)

- Gestational age, fetal viability, presentation, placenta location (initially)
- Amniotic Fluid volume
- Fetal size/weight
- Presentation
- Fetal Breathing
- Lower uterine segment funneling/cervical length

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Preterm PROM

Expected Outcomes

...Depend on the clinical status of mother and gestational age/status of fetus

Nursing Care focus is to protect both mother and fetus from further harm through continuous assessment and communication with all healthcare team members.



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Preterm PROM Management

- Antibiotic Therapy
- Tocolytics
- Magnesium Sulfate- Neuroprophylaxis
- Steroid Administration
- Cesarean Section vs. Vaginal Delivery of a premature infant

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Why This Matters: Benefits of Antenatal Corticosteroids (ACS) Between 24 and 34 Weeks

Antenatal corticosteroids led to reduction in:	
Neonatal death (NND)	~ 30%
Respiratory distress syndrome (RDS)	~ 35%
Intraventricular hemorrhage (IVH)	~ 50%
Cerebroventricular hemorrhage	~ 50%
Necrotizing enterocolitis (NEC)	~ 55%
NICU admissions	~ 20%
Early systemic infections	~ 50%

Roberts D, Dalziel S. Cochrane Database of Systematic Reviews 2008; Issue 3
ACOG Committee Opinion 475. Obstet Gynecol 2011;117:422-4.

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ACS Use

The Joint Commission Perinatal Care Core Measure-03 Antenatal Steroids

- Patients at risk of preterm delivery at 24 to 32 weeks gestation receiving antenatal steroids prior to delivering preterm newborns



ACOG

- "The most beneficial intervention for patients in true preterm labor is the administration of corticosteroids."
- Recommended between 24 weeks and 34 weeks gestation when risk of preterm delivery is within 7 days

ACOG Committee Opinion 475, Obstet Gynecol 2011;117:422-4.
ACOG Practice Bulletin No 127, Obstet Gynecol. 2012;119(6):1308-17.
Specifications Manual for Joint Commission National Quality Measures (v2012A),
Perinatal Care Measures.



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Suppression/Inhibition of PTL

Contraindications

- Intrauterine Demise (IUFD)
- Fetal anomaly
- Fetal Distress
- Hemorrhage
- Severe Pre-eclampsia
- "Excessive" cervical dilatation ??
- < 20 weeks gestation ??
- Preterm PROM ??

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Inhibition of Preterm Labor

Tocolytics- does it really work??

- Magnesium Sulfate
- Betasympathomimetics
 - ☞ Ritodrine (only FDA approved)
 - ☞ Terbutaline
- Calcium Channel Blockers
 - ☞ Nifedipine/ Procardia
- Prostaglandin Synthetase Inhibitors
 - ☞ Indomethacin/ Indocin


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Inhibition of Preterm Labor

Tocolysis

Magnesium Sulfate

- **Action:** Competitive inhibition of entry of free calcium into the cell; blocks Ca with Magnesium; solely excreted by Kidney
- **Administration:**
 - **Initial Bolus:** 4-6 gm over 30 minutes
 - **Maintenance:** 1-3 gm/ hour
 - **Neuroprophylaxis:** Very high likelihood of delivery within 12 hours (but not anticipated within 2 hours)




Magnesium Sulfate

Neuroprophylaxis

Administer if very high likelihood of delivery within 12 hours (but not anticipated within 2 hours)

Dosing option #1: Bolus with Infusion (patients in PTL with greater uncertainty about timing of delivery)

- 1) Magnesium Sulfate 4gm IV loading dose (bolus) over 20-30 min.
- 2) Then 2gm/hour up until delivery or to a maximum of 12 hrs.
- 3) Discontinue infusion if delivery no longer felt to be likely w/n 12 hrs.
- 4) Maximum dose of 28 gm per treatment
- 5) Serum levels not required for fetal neuroprophylaxis, as long as respiratory rate and reflexes are normal
- 6) Repeat dosing if greater than 12 hours from end of prior infusion and very high likelihood of imminent delivery (includes both bolus and infusion)




Magnesium Sulfate

Neuroprophylaxis

Dosing option #2: Bolus only (patient in whom timing of delivery is imminent or more certain, i.e. planned C/S; or those in whom an infusion is relatively contraindicated)

- 1) Magnesium Sulfate 4 gm IV loading dose (bolus) over 20-30 minutes; Ideally administer bolus 2-4 hours before planned C/S or imminent delivery
- 2) Repeat bolus dosing if greater than 6 hours from prior bolus and planned or likely delivery is greater than 2 hours away
- 3) Maximum dose of 16 gm per day




Inhibition of Preterm Labor

Tocolysis

Magnesium Sulfate (cont.)

- **Therapeutic Level:** 4-7 mg/dl
- **Mat/Fetal/Neo Effects:**
 - ◆ Lethargy
 - ◆ Respiratory Depression
- **Antidote:** Calcium Gluconate (1 gm over 1-2 minutes)
- **Nursing Assessment:** VS, DTR's, EFM, I&O, LOC, LABS- Magnesium level




Inhibition of Preterm Labor

Tocolysis

Terbutaline

- **IV:** 0.01-0.08 mg/min; ↑ by 0.01 mg/min every 10 min; max dosage is 0.08 mg/min
- **IM/SQ:** 0.25 mg every 2-4 hours
- **SQ Pump**
 - ◆ Basal: 0.05-0.1 mg/hr
 - ◆ Bolus: 0.25 mg every 2-4 hours
- **PO:** 2.5-5.0 mg every 2-4 hours




Inhibition of Preterm Labor

Tocolysis

Terbutaline (cont)

- **Action:** Stimulation of B₂ receptors primarily causing ↓ vascular/smooth muscle tone, ↓ bronchial tone, ↓ myometrial contractility
- **Mat/Fetal/Neo Effects:**
 - ◆ Tachycardia
 - ◆ Transient Hyperglycemia




Inhibition of Preterm Labor

Tocolysis

Terbutaline (cont)

- **Relative Contraindications:**
 - ◆ Cardiac Disease
 - ◆ Insulin Requiring Diabetes
 - ◆ Bleeding
- **Antidote:** Inderal (1 mg IV)
- **Nursing Assessment:** VS (✓ HR), EFM, I&O (watch for pulmonary edema), Labs – glucose, calcium




Inhibition of Preterm Labor

Tocolysis

Nifedipine

- **PO:** Initially, 10 mg; repeat doses of 10 mg every 20 min. x 3 doses; then 10-20 mg every 4-6 hours (max dosage is 120 mg/24 hours)
- **Action:** Interferes with the entry of free calcium into the cell




Inhibition of Preterm Labor

Tocolysis

Nifedipine (cont)


- **Contraindications:** CHF or Aortic Stenosis
- **Mat/Fetal/Neo Effects:**
 - ◆ Hypotension
 - ◆ Transient Tachycardia
- **Nursing Assessment:** VS (✓ HR & BP), EFM



Inhibition of Preterm Labor
Tocolysis

Indomethacin

- **PO:** Initially, 25-50 mg; then 25 mg every 6 hours for only 48-72 hours
- **Action:** Inhibits the conversion of arachidonic acid to prostaglandin F₂ and E₂




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Inhibition of Preterm Labor
Tocolysis

Indomethacin (cont)


- **Contraindications:** Asthmatic, > 34 weeks
- **Mat/Fetal/Neo Effects:**
 - ◆ ↓ Amniotic Fluid
 - ◆ Premature closure of Ductus Arteriosus
- **Nursing Assessment:** EFM (✓ for variable decelerations), US for AFV, GI upset



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Inhibition of Preterm Labor
Implications of Long Term Therapy/ Bedrest
Hospitalization vs Home

- **Physical Demands**
 - ☞ Constipation
 - ☞ Insomnia
 - ☞ Muscle Atrophy
- **Environment Changes**
 - ☞ Rearrange household- furniture, telephone TV, stereo, ice chest/food at bedside, lights on timers, house key to friends/relatives, clothing
 - ☞ Alter ADL's- housekeeping, child/pet care, no work



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Step 1: Assessment/Supportive Care

1. Place the patient in the triage or labor room for evaluation, which should be completed in 2 to 4 hours
2. Reassure the patient and her family with careful explanation of all procedures
3. The registered nurse will review the prenatal record and inquire about previous preterm deliveries
4. Obtain objective data:
 - External monitor for contractions and fetal heart pattern
 - Routine labs
 - SSE: assess for ruptured membranes, obtain fFN (if ordered)
 - SVE: assess cervical status
 - Preterm labor screen: TVU and/or fFN test
5. Inform OB provider

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Step 2: Disposition Option A — Preterm Labor is Identified

If regular uterine contractions are accompanied by*:

- a) Initial SVE with cervical dilation of at least 2 cm **AND/OR**
- b) Short cervix ≤ 20 mm long by TVU between 20 and 28 weeks **OR**
- c) Repeat SVE notes change in cervix (dilation and/or effacement)

Then:

1. Notify provider
2. Administer antenatal corticosteroids if between 24 and 34 weeks gestation
3. Initiate short-term tocolytic therapy, if ordered by provider
4. Admit as inpatient/prepare for transport
5. Activate intervention pathways (e.g., cerclage, vaginal progesterone), if appropriate

*Assumes intact membranes.

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Step 2: Disposition Option B — Preterm Birth Risk Factors

If regular uterine contractions are accompanied by*:

- a) Cervix 21-24 mm long by TVU between 20 and 28 weeks gestation **AND/OR**
- b) Positive fFN between 22 and 34 weeks gestation

Then:

1. Notify provider
2. Consider antenatal corticosteroids (if between 24 and 34 weeks gestation)
3. Consider situational and patient-specific interventions as ordered by provider
4. Discharge disposition after adequate assessment for cervical change:
Consider increased frequency of assessment

*Assumes intact membranes.

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Step 2: Disposition Option C — Low Risk of Preterm Labor

If regular uterine contractions and results of **ALL** factors assessed are negative* (cervical dilation of less than 2 cm by SVE, no cervical change at two hours, cervix ≥ 25 mm long by TVU, negative fFN):

Then:

1. Notify provider
2. Teach patient home care instructions; make aware of risk factors, if any
3. Make follow-up medical appointment in one week
4. Discharge, if ordered by provider

*Assumes intact membranes.

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Step 2: Disposition Option D — fFN & TVU Unavailable

If cervical dilation is less than 2 cm by SVE only (neither fFN *nor* TVU available):

Recommend serial SVE to assess for cervical change:

1. **Wait 2 hours and repeat SVE.** Serial SVE may be performed more than once at 2-hour intervals if the symptomatic patient is clinically stable and has major risks for preterm delivery — e.g. prior preterm delivery before 34 weeks or current Estimated Gestational Age (EGA) ≤ 32 weeks
2. **If cervical change, then:**
 - A. Notify provider
 - B. Administer antenatal corticosteroids, if between 24 and 34 weeks gestation
 - C. Initiate short-term tocolytic therapy, if ordered by provider
 - D. Consider admission as inpatient/preparation for transport
3. **If no cervical change, then:**
 - A. Notify provider
 - B. Teach patient home care instructions; make aware of risk factors, if any
 - C. Make follow-up medical appointment in one week
 - D. Discharge if ordered by provider

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Preterm Labor Assessment at 20 to 23 6/7 Weeks

Challenges:

- Both SVE and SSE assess several important factors but fail to detect early cervix changes such as dilation of the internal os, thus hampering timely interventions
- fFN testing is ineffective at this gestational age, thus not FDA approved
- Consider TVU for cervical length:
 - If ≤ 15 mm, rescue cerclage and/or start daily progesterone (90mg gel or 200 mg micronized capsule, both by vaginal administration)
 - If ≤ 25 mm, consider offering cerclage and/or starting daily progesterone (90mg gel or 200 mg micronized capsule, both by vaginal administration)
 - Consider ACS for ≥ 23 weeks gestation

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Inhibition of Preterm Labor
Implications of Long Term Therapy/ Bedrest
Hospitalization vs Home (cont)

- **Psychological Impact**
 - * Feelings of guilt, ambivalence, dependence, fear, anger, anxiety, lack of control, depression
 - * Confined to hospital/home/bed
 - * Role change
 - * Boredom



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Inhibition of Preterm Labor
Implications of Long Term Therapy/ Bedrest
Hospitalization vs. Home (cont)


- **Survival Techniques**
 - ↳ Structure each day
 - ↳ Create lists
 - ↳ Plan to entertain
 - ↳ Borrow a pet
 - ↳ Be useful



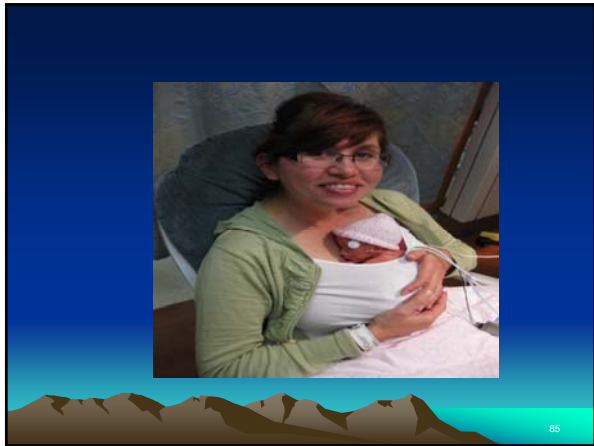
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Summary

- Preterm birth remains a serious problem
- Women at risk need to be identified early for evaluation and intervention
- PLAT provides an effective means to improve care of women who present with symptoms of preterm labor and to allow proper assessment and clinical disposition in 2 to 4 hours:
 - A. Prompt confirmation of preterm labor by diagnostic criteria allows timely intervention
 - B. For women who do not meet preterm labor diagnostic criteria, PLAT utilizes risk assessment screening including TVU and fFN as predictors of preterm birth:
 - Positive test(s) can help target interventions in women most likely to benefit
 - Negative test(s) can help in avoiding unnecessary interventions and provide reassurance



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Preterm Labor & the Management of the Patient on Tocolytics

References

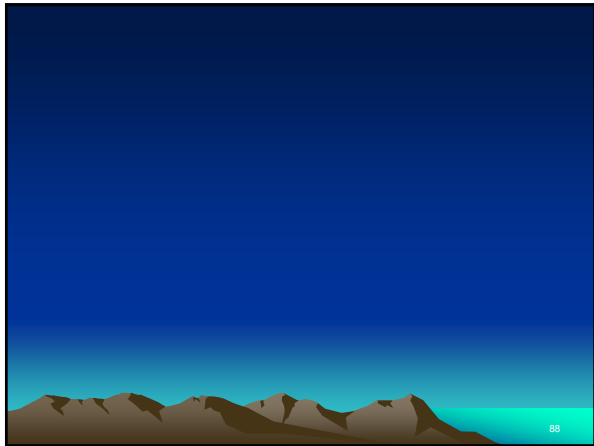
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Questions



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The End

Premature Delivery

Let's Prevent Preterm Birth

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