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Preterm Labor

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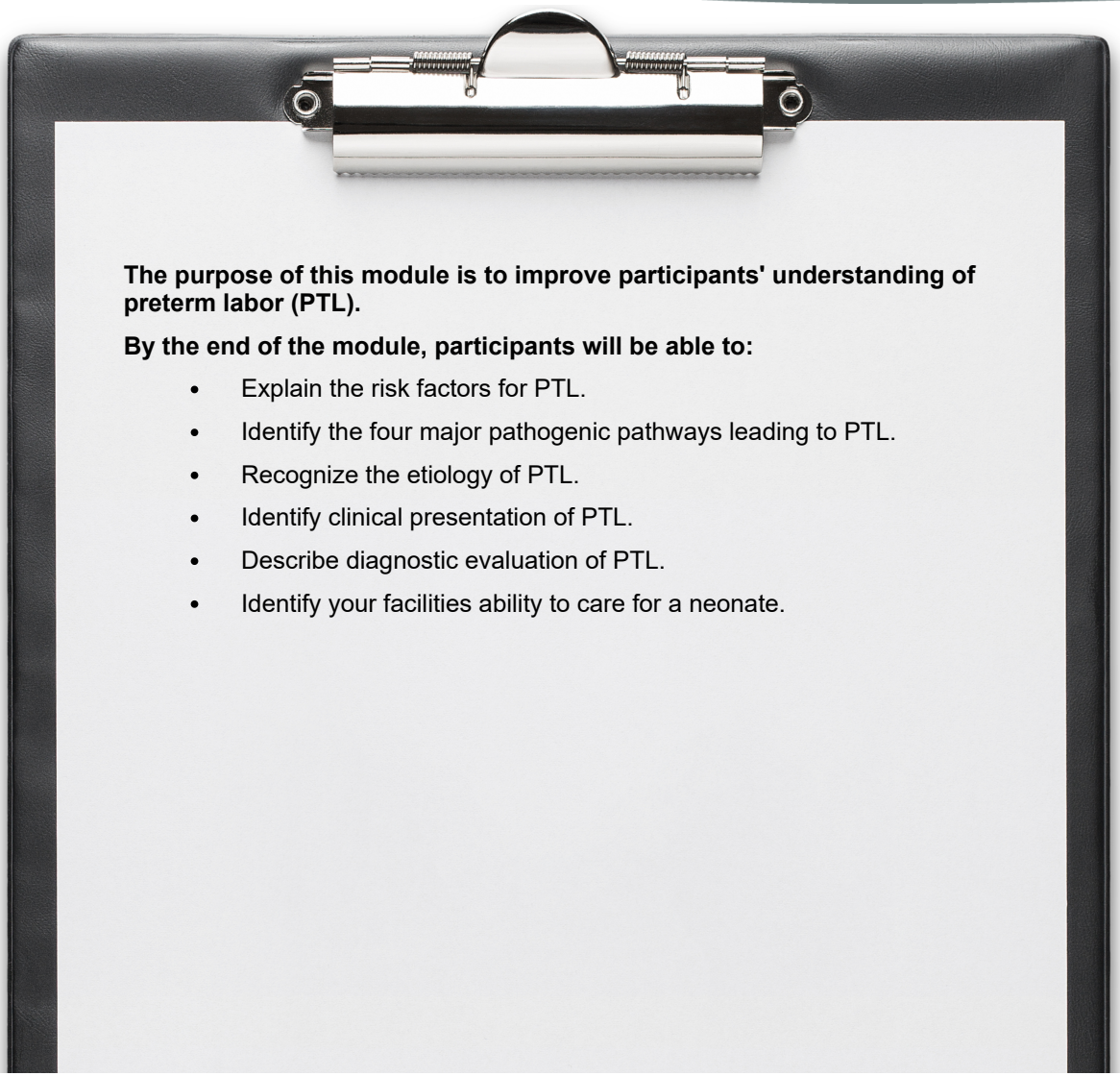
Course Description:

When neonates enter the world prematurely, it is a long road to recovery. Preterm labor is certainly a factor for prematurity at birth. The Maternal 911 Preterm Labor course will help review and gain knowledge for the participant. This will help to prevent and resolve preterm labor and thus birth. The goal is a term birth allowing better success for the newborn. The recognition and management of preterm labor may have a huge impact in this arena of prematurity.

Approximate Time to Complete: 40 minutes

Click here to download a print version of this course.



The purpose of this module is to improve participants' understanding of preterm labor (PTL).

By the end of the module, participants will be able to:

- Explain the risk factors for PTL.
- Identify the four major pathogenic pathways leading to PTL.
- Recognize the etiology of PTL.
- Identify clinical presentation of PTL.
- Describe diagnostic evaluation of PTL.
- Identify your facilities ability to care for a neonate.

- Introduction
  - Definition
  - Pathogenic Pathways
  - Risk Factors
  - Clinical Presentation
  - Concerns
- Diagnostic Evaluation
  - History and Initial Exam
  - Goals of the Initial Exam
  - If fFN Testing Is Desired
  - Cervical Examination
  - Laboratory Evaluation
  - Fetal Fibronectin
  - Diagnosis
- Management and Treatment
  - ≥34 Weeks of Gestation
  - <34 Weeks of Gestation
  - <34 Weeks Gestation Ultrasound
  - Cervical Length
  - Treatment of Women <34 Weeks
  - Planning and Prevention
- Summary

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Preterm labor likely results from:

local changes that prematurely stimulate the cascade of events resulting in spontaneous labor or premature withdraw of suppressive factors that maintain uterine quiescence and thus inhibit this cascade.

A woman's likelihood of preterm delivery has contributing factors involving multiple genetic, environmental and immunological factors.

- Causal factors between genetic susceptibility and environmental stimuli must also play a role.

Defining early and late preterm births:

- early preterm birth is from 24 weeks 0 days to 33 weeks 6 days
- late preterm birth is from 34 weeks 0 days to 36 weeks 6 days

Preterm labor occurs due to four major pathogenic pathways:

RISK FACTORS

- Risk factors are abundant for PTL and delivery (Table: **Risk Factors for Preterm Birth**).
- Research is showing the root cause of PTL may be from dysfunctional immunological defense within the tissue of the uterus, suggesting these risk factors are markers for these immune issues [1].
- Some risk factors are reversible, others are permanent.
- Ideally, identifying the risk factor for preterm birth (PTB) before conception or early in pregnancy could lead to interventions to help prevent PTB.

True labor has similar clinical findings, contractions with cervical change, whether at term or preterm.

There are early non-specific signs and symptoms of labor which may be present for several hours in women not exhibiting cervical change:

- Menstrual-like cramping
- Mild, irregular contractions
- Low back ache
- Vaginal pressure
- Mucus discharge from the vagina such as mucus plug or bloody show, which may be:
- Pink
- Clear
- Slightly bloody

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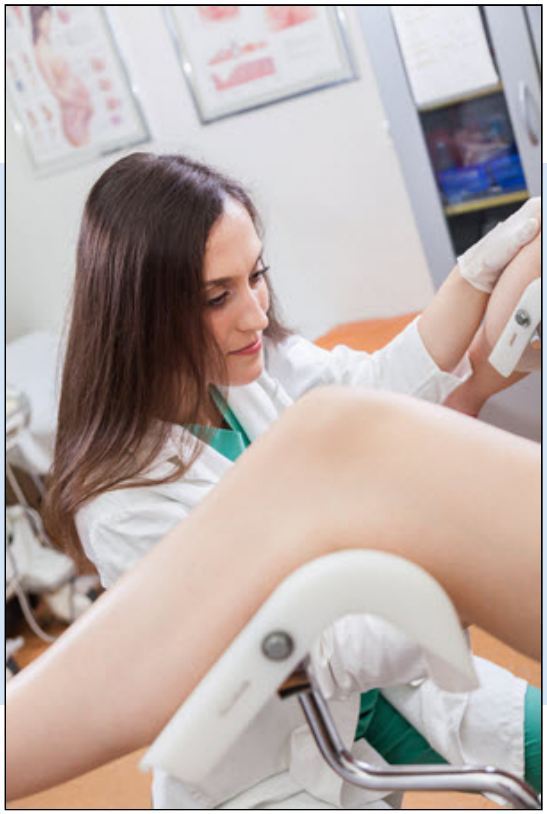
CONCERNS

Click each blue tab to learn more.

The initial evaluation of women with suspected PTL includes:

- Review the patients past and present:
- Obstetrical history
- Medical history
- Assessment of gestational age
- Evaluation of signs and symptoms of preterm labor and risk factors for PTB (Table: **Risk Factors Preterm Labor**).
- Maternal vital signs (temperature, blood pressure, heart rate, respiratory rate).
- Review of the fetal heart rate pattern.
- Assessment of contraction frequency, duration, and intensity.
- Examination of the uterus to assess firmness, tenderness, fetal size, and fetal position.
- Speculum examination using a wet non-lubricated speculum.
- Lubricants may interfere with tests on vaginal samples.



The goals of the initial examination are to:

- Determine cervical dilation because when > 3 cm, this supports preterm labor as a diagnosis.
- Assess the presence and amount of uterine bleeding.
- Bleeding from abruptio placenta or placenta previa can trigger PTL.
- Evaluate for intact or ruptured membranes by standard methods.
- Preterm premature rupture of membranes (PPROM) often precedes or occurs during PTL.
- Diagnosis and management of PPROM are reviewed separately.

Obtain a cervicovaginal fluid specimen in case fetal fibronectin (fFN) testing is desired.

If a speculum is not available a blind collection can be performed.

- There are different methods to obtain specimens:
- Depress the posterior vaginal wall with an unlubricated, gloved finger then pass the polyester swab slowly along the finger towards the posterior fornix until resistance is felt [4]
- Hold the labia apart, then pass the swab blindly into the vagina, directing slowly towards the posterior fornix until resistance is met [5]
- The swab is rotated in the posterior fornix for 10 seconds.
- In both methods, it is important to stop at the first sign of resistance to avoid rupturing exposed membranes, if present.

Cervical Examination

Cervical evaluation should only occur once the following have been excluded by the necessary means (i.e. ultrasound, history, physical exam, labs, etc.):

- Placenta previa
- Rupture of membranes

Once these have been ruled out, the cervix may be evaluated by digital exam for dilation and effacement.

The cervical evaluation should occur sooner if the information is urgently needed to provide care for the patient such as abnormal fetal heart rate or suspicion of advanced phase during active labor and when placenta previa is unlikely.

Again, when cervical dilation is > 3 cm, this supports PTL.

At this point, the inhibition of acute PTL is less likely to be successful as the cervix dilates beyond 3 cm.

Click the image to learn more.

Laboratory Evaluation

Ordering the following laboratory tests may be considered:

- Vaginal-rectal group B streptococcal culture if not done within the previous five weeks.
- Antibiotic prophylaxis depends on the results.
- Urine culture, since asymptomatic bacteriuria is associated with an increased risk of preterm labor and birth.
- Drug testing in patients with risk factors for substance abuse. There is an association between cocaine use and placental abruption.
- Fetal fibronectin (fFN) in women <34 weeks of gestation with cervical dilation <3 cm and cervical length 20 to 30 mm on transvaginal ultrasound examination.
- If not already performed, consider testing for sexually transmitted infections (STI), gonorrhea and chlamydia.

FETAL FIBRONECTIN

Fetal fibronectin (fFN) is an extracellular matrix protein present at the decidual-chorionic interface.

Disruption of the decidual-chorionic interface due to subclinical infection, inflammation, abruption, or uterine contraction leads to the release of fFN into the cervico-vaginal secretions. This is the basis for fFN as a marker for predicting spontaneous preterm birth [6].

A + fFN test in women with intact membranes, cervical dilation < 3cm, and no gross vaginal bleeding correlates with an increased risk of PTB within seven days.

A + fFN concentration correlates to 50 ng/mL or higher in cervico-vaginal fluid between 22 0/7 weeks and 34 6/7 weeks gestation.

Click the left and right arrows to see more.

Based upon clinical criteria, the diagnosis of preterm labor arrives from regular painful uterine contractions along with cervical change:

- Dilation

and/or

- Effacement

Diagnosis of PTL certainly occurs when there is ruptured membranes [18].

The clinical findings of early labor are poorly predictive of the diagnosis, thus over diagnosing is common until labor is well established.

≥34 weeks of gestation

The threshold at which perinatal morbidity and mortality are too low to justify the potential maternal and fetal complications is the 34th week of gestation.

Costs associated with inhibition of preterm labor only result in short term delay of delivery at and beyond this 34th week.

Another concern is with antenatal steroids; the steroids are not typically administered after the 34th week of gestation because of the low risk of severe respiratory morbidity.

There are circumstances where antenatal steroid may be indicated beyond 34 weeks. This discussion is beyond the scope of the Maternal 911 program.

- However, recent data indicates betamethasone decreases newborn respiratory morbidity when given to women in the late preterm period between 34 0/7weeks and 36 6/7 weeks [33].

Click here to learn more.

The diagnosis of preterm labor is supported in a woman less than 34 weeks gestation with uterine contractions and cervical dilation ≥ 3cm.

- Diagnostic accuracy is not gained with addition of other studies such as fFN or ultrasonic measurement of cervical length.
- Preterm labor treatment is initiated.

The diagnosis of preterm labor is less clear in women with contractions, cervical dilation < 3 cm and intact membranes.