MATERNAL911

Preterm Premature Rupture of Membranes (PPROM)

Click the next button to continue...

Maternal 911 Education Systems, LLC
475 West Center St.
Ithaca, MI 48847
www.maternal911.com

Maternal 911 and Maternal 911 in Action contains information designed as an educational resource to aid practitioners in providing obstetric care and the use of this information is voluntary. This information should not be considered as inclusive of all proper treatments or methods of care or as a statement of the standard of care. It is not intended to substitute for the independent professional judgement. Maternal 911 reviews the publication regularly, but may not reflect the most recent evidence.

Maternal 911 makes every effort to present accurate and reliable information. The Maternal 911 and Maternal 911 in Action are publications provided 'as is' without any warranty of accuracy, reliability or otherwise, either express or implied. Maternal 911 does not guarantee,warrant or endorse the products or services of any firm, organization or person. Neither co-founder nor any officers, directors, members, employees, participants or agents will be liable for any loss, damage or claim with respect to liabilities, including direct, special, indirect, or consequential damages, incurred in connection with this publication or reliance on the information presented.

Data from completing the modules may be used in research and publications with privacy maintained.

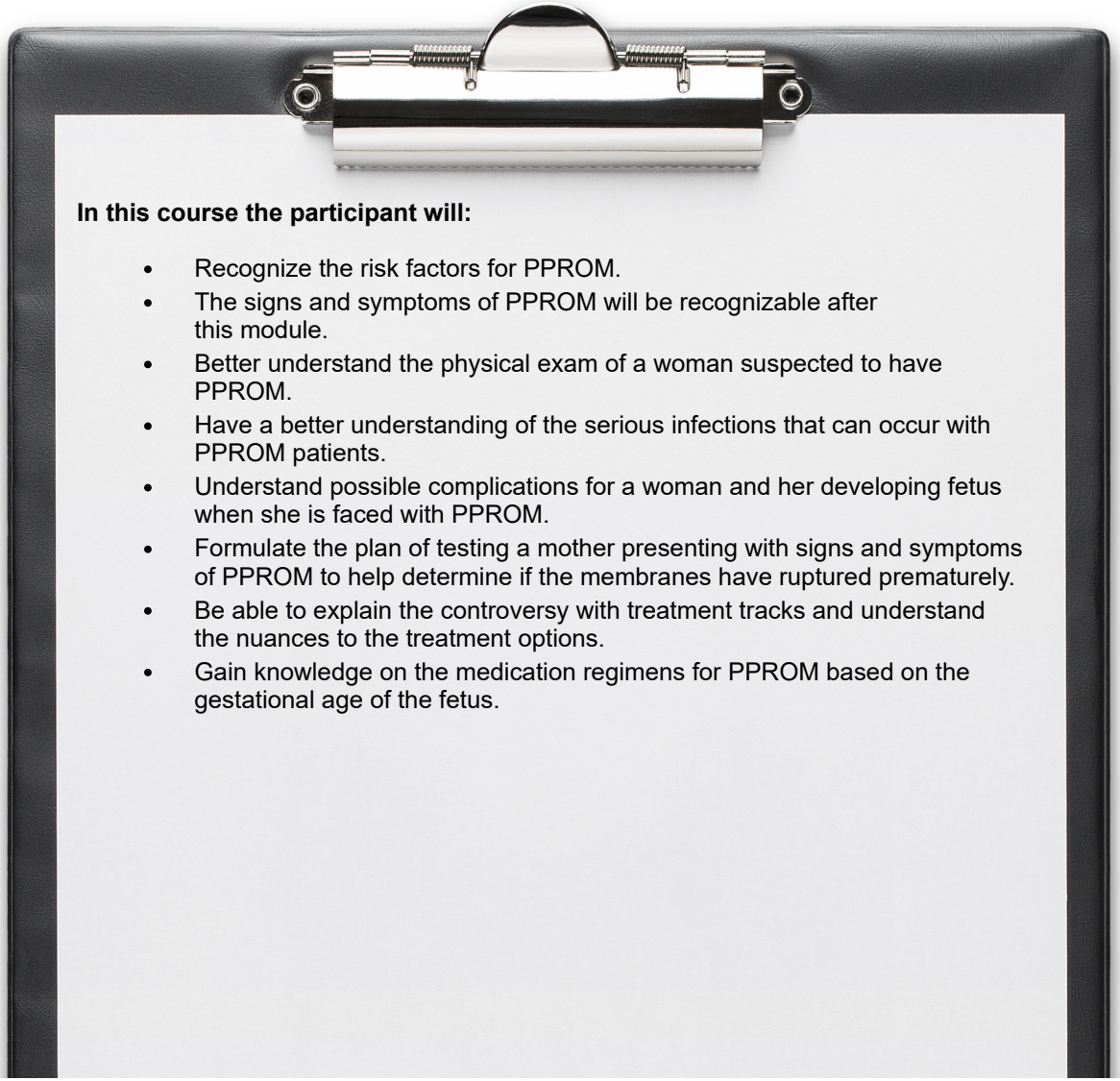
MATERNAL911

Course Description:

Leaking fluid? We have problems! Preterm Premature Rupture of Membranes (PPROM) continues to be a leading cause of neonatal morbidity and mortality. This module will help to develop a knowledge base to further the care of a woman with PPROM.

Approximate Time to Complete: 45 minutes

Click here to download a print version of this course.



In this course the participant will:

- Recognize the risk factors for PPROM.
- The signs and symptoms of PPROM will be recognizable after this module.
- Better understand the physical exam of a woman suspected to have PPROM.
- Have a better understanding of the serious infections that can occur with PPROM patients.
- Understand possible complications for a woman and her developing fetus when she is faced with PPROM.
- Formulate the plan of testing a mother presenting with signs and symptoms of PPROM to help determine if the membranes have ruptured prematurely.
- Be able to explain the controversy with treatment tracks and understand the nuances to the treatment options.
- Gain knowledge on the medication regimens for PPROM based on the gestational age of the fetus.

Premature rupture of membranes (PROM)

Defined as membrane rupture before the onset of uterine contractions (also called pre-labor rupture of membranes)

Preterm PROM (PPROM)

PROM before 37 weeks 0 days of gestation.

Occurrence of PPROM

PPROM occurs in three percent of pregnancies, but is responsible for or associated with about one-third of preterm births [1].

PPROM Risk Factors

- These risk factors are similar to those for preterm labor (PTL) (Table 1), but most patients have no identifiable risk factors.
- A history of PPROM in a previous pregnancy, genital tract infection, antepartum bleeding, and cigarette smoking have a particularly strong association with PPROM [2].

Click on the table to view a larger version.

Bacteruria	No partner
Periodontal disease	Low socioeconomic status
Placenta previa	Anxiety
Placental abruption	Depression
Vaginal bleeding, especially in more than one trimester	Life events, divorce, separation, death
Previous PTD	Abdominal surgery during pregnancy
Substance abuse	Occupational issues
Smoking	upright postures
Maternal age (younger than 18 or older than 40)	use of industrial machines
African-American race	physical exertion
Poor Nutrition and low body mass index	mental or environmental stress related work
Inadequate prenatal care	working conditions
Anemia (hemoglobin <10g/dL)	Multiple gestation
Excessive uterine contractions	Polyhydramnios
Low level of educational achievement	Uterine anomaly
Genotype	DES induced uterine changes
Fetal anomaly	History of second trimester abortion
Fetal growth restriction	History of cervical surgery
Environmental factors (i.e. heat, air pollution)	Premature cervical dilatation or effacement (shortened cervix)
STI's	

PPROM is noted to have a classic presentation of a sudden gush of clear or pale yellow fluid from the vagina.

The problem is that many women describe intermittent or constant leaking of small amounts of fluid or just a sensation of wetness within the vagina or on the perineum.

On ultrasonography:

- Ultrasound findings show 50-70% of women with PPROM to have low amniotic fluid volume on initial sonography [14].

Physical Exam:

- Pathognomonic of PPROM is directly visualizing amniotic fluid coming out of the cervical canal or pooling in the vaginal fornix.
- During the direct visualization of the cervical os, if the amniotic fluid is not immediately visible, the woman can be requested to push on her fundus, Valsalva, or cough to provoke leakage of the amniotic fluid.
- A sterile speculum is utilized during the examination for patients who are not in active labor.
- The digital exam should be avoided and this avoidance may decrease the latency period (i.e. time from rupture to membranes to delivery) and increase the risk of intrauterine infection [11-13].
- Inspection of the cervix may reveal dilation, effacement and rarely, prolapsed fetal parts or prolapsed umbilical cord.

1

2

3

Click each numbered tab to see more information.

Click on each potential complication as it appears to learn about the potential Offspring and Maternal consequences.

Pregnancy Complication	Potential Consequences for Offspring	Potential Maternal Consequences
Intrauterine infection		

Increased risk of placental abruption and prolapsed umbilical cord occurs with PPROM.

- Placental abruption occurs in 2 to 5 percent of pregnancies complicated by PPROM [21-24].
- Placental abruption risk increases even further with an increase of 7-9 fold in PPROM pregnancies with intrauterine infection or oligohydramnios present [22,23].
- Placenta abruption may be the event that either causes PPROM or the consequence of PPROM.

It is common to have fetal malpresentation and reduced amniotic fluid volume at a preterm gestational age.

- The cord prolapse risk is especially high, up to 11% in one study [25], when both non-vertex fetal presentation occurs with PPROM.
- This malpresentation may also increase the risk of abruption, infection, and fetal death in-utero [26].

When PPROM occurs early, is severe and with prolonged oligohydramnios, it can be associated with pulmonary hypoplasia, facial deformation, and orthopedic abnormalities.

- These complications are much more likely when membrane rupture occurs under 23 weeks of gestation.

- **Nitrazine**
- **Ferning**
- **Ultrasonography**
- **Instillation of Indigo Carmine**
- **AmniSure vs Actim PROM**
- **AmniSure**
- **Actim PROM**
- **fFN**

- Generally, the diagnosis of PPROM occurs clinically and is based on the visualization of amniotic fluid in the vagina of a woman who presents with a history of leaking fluid.
- When the diagnosis is uncertain, laboratory tests are utilized.

Click each term to the left to learn more about diagnosing PPROM.

- There are other causes of vaginal wetness
  - Urinary incontinence
  - Vaginal discharge
  - Perspiration
  - When the clinical and laboratory findings for PPROM are negative, these other causes should be considered.
  - A mild reduction in amniotic fluid volume, by ultrasound findings, is non-specific and related to many etiologies including PPROM.

- Highly suggestive of PPROM is the finding on ultrasound of anhydramios or severe oligohydramnios, combined with a characteristic history.
  - Although, renal agenesis, obstructive uropathy or severe utero-placental insufficiency may be the etiology to marked reductions in amniotic
    fluid volume.

- Some of the most controversial issues in perinatal medicine come from contentions in treating PPROM.
- Points of contention include:
  - Expectant management versus intervention
  - Use of tocolytics
  - Duration of administration of antibiotic prophylaxis
  - Timing of administration of antenatal corticosteroids
  - Methods of testing for maternal/fetal infection
  - Timing of delivery
  - Treatment of women from 23-37 weeks gestation who have PPROM will be reviewed.
  - Treatment of previable PPROM and ROM at term are topics beyond the scope of this program.

PPROM management in women is based upon consideration of several factors, which are assessed at presentation:

- Gestational age
- Presence or absence of maternal and/or fetal infection
- Presence or absence of labor
- Fetal presentation
- Fetal well-being
- Fetal lung maturity
- Cervical status (by visual inspection)
- Sterile speculum (by visualization with a sterile speculum)
- Availability of neonatal intensive care

Assessment

- Nitrazine and fern
- Placental alpha microglobulin-1 protein assay (AmniSure)
- Once confirmed PPROM then consider:
  - Complete blood count
  - Culture for Neisseria gonorrhoeae, Chlamydia trachomatis, Trichomonas vaginalis, and bacterial vaginosis.
- Fetal lung maturity testing
  - Lamellar body count in amniotic fluid
  - Lecithin:sphingomyelin (L/S) ratio
- Rectovaginal culture for group B streptococcus
- Ultrasound to determine:
  - Fetal growth
  - Fetal position
  - Residual amniotic fluid volume
  - Fetal anatomy
- Biophysical profile
- Cardiotocography monitoring for fetal heart rate (non-stress test) and uterine contraction frequency

- A key factor in managing PPROM is whether to induce labor (or perform a cesarean) or to manage expectantly.
- An immature fetus may benefit by prolonging the pregnancy which could result in significant reduction in gestational aged related morbidity. However, this benefit needs to balance with the risks of PPROM associated complications and their sequelae (Table 2).
- When intratuterine infection, abruptio placentae, nonreassuring fetal testing, or high risk of cord prolapse is present or suspected, then expeditious delivery of these women is appropriate.
- With each of these situations, fetal well being can quickly deteriorate during expectant management and there are no therapeutic interventions available other than delivery.
- When these complications are absent, interventions leading to delivery are not indicated, until 34 weeks, then proceeding with delivery is appropriate.
- An algorithm to manage women with PPROM at 26-37 weeks is shown (Algorithm 1).
- Several aspects of management will be discussed, however, a detailed analysis of the nuances in managing women with PPROM is beyond the scope of this program.

- The optimal time to intervene varies by facility and depends on the balance between morbidity related to prematurity and morbidity related to complications from PPROM.
- American College of Obstetricians and Gynecologists (ACOG) suggests delivery of all patients at 34 weeks 0 days gestation [42].
- Between 28-37 weeks gestation, meta analysis of randomized trials and subsequent randomized trials, have not provided conclusive evidence favoring induction or expectant management of women with PPROM [43-46].
- The data is limited for analysis due to heterogeneity among the trials.
- Example are fetal lung maturity not being consistently determine and thus not a factor in selecting patients who may or may not benefit from expectant management.
- Another example that could not be assessed is the administration of prophylactic antibiotics because there was not a standard practice and patient level data were not analyzed.
- The last concern involves the power of the trials; the trials have been underpowered to detect meaningful measures of neonatal and maternal morbidity.

Administration of Antenatal Corticosteroids

Antibiotic Therapy

Prophylaxis

Drug Regimen

Chemoprophylaxis for GBS

Tocolysis

Supplemental Progesterone

Hospitalization versus Home Care

Maternal Monitoring

Fetal Monitoring

Click each term to learn more.