This care process model (CPM) was developed by Intermountain Healthcare’s OB Development Team under the guidance of the Women and Newborns Clinical Program. It recommends an evidence-based approach for assessing and managing pregnancies affected by premature (prelabor) rupture of membranes (PROM). The model provides guidance for cases of very preterm PROM (in the second trimester or earlier) through term PROM (occurring at 37 weeks completed gestation or later).

### Why Focus on PROM?

Premature rupture of membranes (PROM) warrants our attention for several reasons.

- **It’s common and increasing.** PROM occurs in approximately 8% to 10% of term pregnancies, and preterm PROM (PPROM, defined as PROM prior to 37 weeks completed gestation) occurs in 2% to 4% of all singleton and 7% to 20% of twin pregnancies. PPROM is a complication in about one-third of all preterm births, which have increased by 38% since 1981. Every obstetric provider will see and need to manage many cases of PROM in the course of his or her career.

- **PPROM in particular is associated with increased morbidity and mortality.** About one-third of women with PPROM develop potentially serious infections, and the fetus/neonate is at even greater risk of PPROM-related morbidity and mortality than the mother. Premature delivery and its attendant potential problems, perinatal infection, and in utero cord compression are common complications. PPROM accounts for approximately 18% to 20% of perinatal deaths in the United States.

- **Practice varies widely.** Management hinges on knowledge of gestational age and assessing the relative risks of preterm birth versus expectant management. As our understanding of these risks and the factors affecting them evolves, we expect to reduce variability of practices such as the timing of delivery, the use of medications, and the preferred surveillance practices of expectant management.

- **A systematic and evidence- and consensus-based approach may improve outcomes.** See “Goals of this CPM” at right to see how we hope to benefit from implementing this model.
Per patient choice, either:

- **Induce Labor** (refer to Intermountain’s Pregnancy Termination Procedure).
- **Manage Expectantly / Decision to Resuscitate** (Inpatient) as described at right.
- **Manage Expectantly / Decision Not to Resuscitate** (Outpatient) as described below.

**Algorithm: Management of PROM**

1. **Patient presents with suspected PROM**
   - **Assess for PROM**
     - Medical history and physical exam; other tests as needed.
     - See Assessment Notes on page 3.
   - **Confirm PROM**
   - **Transfer to L&D**
     - As needed, give tocolytic only to allow transport of preterm PROM patients having labor contractions.
   - **Evident intrauterine infection, placental abruption, or fetal compromise?**
     - **Yes**
       - Deliver expeditiously
     - **No**
       - **Manage per gestational age as outlined below**

**~24 weeks or less**

- **Provide Counseling to patient and family.**
- Gestational age at delivery provides best estimate of chance of survival. If 22-24 weeks gestation, consultation with Neonatology to discuss resuscitation issues is recommended. See page 3 Notes on PPROM.

- Per patient choice, either:
  - **Induce Labor** (refer to Intermountain’s Pregnancy Termination Procedure).
  - **Manage Expectantly / Decision to Resuscitate** (Inpatient) as described at right.
  - **Manage Expectantly / Decision Not to Resuscitate** (Outpatient) as described below.

- **Consider Inpatient Evaluation** for 24 to 48 hours and administration of latency antibiotics. See page 3 Medication Table.
- **Discharge** to home with instructions to monitor temperature daily (call if temperature ≥ 100.4°F / 38°C).
- **Perform** weekly fetal ultrasound. Note that corticosteroids are NOT recommended.
- If fetus reaches viability and patient and Neonatology care team decide to resuscitate infant upon delivery, **Admit as Inpatient and...**

**~25 weeks (~25 weeks 6 days)**

- **Manage Expectantly (Inpatient) as described in steps below.**
- **Give Magnesium** if delivery expected <24 hrs. See Medication Table page 3.
- **Give Corticosteroid.** See Medication Table page 3.

**~32 weeks (~32 weeks 6 days)**

- **Manage Expectantly (Inpatient) as described in steps below.**
- **Give Antibiotic to Prolong Latency.** See Medication Table page 3.
- **Consult MFM** if HSV, HIV, or hepatitis C.
- If cerclage: LEAVE IN PLACE, unless patient has intrauterine infection or unexplained vaginal bleeding.

- **Provide Surveillance:**
  - Daily nonstress test to monitor fetal health.
  - Periodic (not daily) ultrasound to assess amniotic fluid; if patient no longer reports leakage of fluid, do u/s to check for reaccumulation of fluid suggesting resealing of the rupture. (If resealed, the patient may be discharged home.)

- **Assess Fetal Lung Maturity** via lamellar body count of amniotic fluid from vaginal pool specimen: attempt to obtain specimen at 32 weeks and **Proced to Delivery if Lung Maturity Can Be Documented;** otherwise **Deliver at 34 Weeks.**

**~34 weeks or more**

- **Give Antibiotic for GBS Prophylaxis** as needed; following Intermountain’s Prevention of Perinatal GBS algorithm.
- **Deliver** (usually by induction of labor)

©2012 INTERMOUNTAIN HEALTHCARE. ALL RIGHTS RESERVED.
ASSESSMENT NOTES

PROM is a clinical diagnosis usually based on patient history and visualization of amniotic fluid during physical exam. In some cases, lab tests are needed to exclude other possible causes of vaginal or perineal wetness.

- **Medical history:** Timing and quantity of leaking or wetness, weeks gestation/EDD, pregnancy history of PROM, etc.
- **Physical exam:** *Avoid digital exam unless active labor or imminent delivery is expected.* Use sterile speculum examination to:
  - Visually inspect for cervicitis, umbilical cord prolapse, or fetal prolapse
  - Assess cervical dilation and effacement
- **Test:** if diagnosis of PROM can’t be visually confirmed:
  - Test pH of fluid from posterior vaginal fornix (amniotic fluid usually ~ 7.1-7.3, versus vaginal secretions ~ 4.5 - 6)
  - Look for arborization of fluid from posterior vaginal fornix

Consider ultrasound to check amniotic fluid volume; to assess fetal weight, gestational age, and presentation; to check for fetal anatomic abnormality; or to confirm diagnosis of PROM by guiding transabdominal instillation of indigo carmine dye.

Consider AmniSure if diagnosis of PROM remains uncertain after physical examination, nitrazine, and fern tests. (AmniSure is a rapid slide test that uses immunochromatographic methods to detect trace amounts of placental alpha microglobulin-1 protein in vaginal fluid.)

NOTES ON PPROM AT <24 WEEKS GESTATION

Advances in neonatal care and in management of PPROM at the limits of viability may continue to impact survival; nevertheless, for PPROM at <24 weeks gestation, fetal and neonatal morbidity remain high. Counseling for patients evaluating their choice for termination (induction of labor) or expectant management should include discussion of both maternal and fetal outcomes and, if gestation is 22 to 24 weeks, should also include a consultation with Neonatology. Note that multiple studies on outcomes are complicated by their small size or other limitations. 

- For counseling patients at 22 to 25 weeks, use the Neonatal Research Network Extremely Preterm Birth Outcome Data.
- If induction of labor before viability is considered, refer to Intermountain’s Pregnancy Termination Procedure for guidance in conforming to current Utah law.

MEDICATION TABLE

<table>
<thead>
<tr>
<th>Medication type, use in PROM</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Magnesium</strong>&lt;br&gt;for neuroprotection in preterm PROM ≤31 weeks when delivery is expected within 24 hours&lt;br&gt;(Options listed at right will provide GBS coverage for 48 hours. If delivery is expected after 48 hours and before completion of antibiotics used to prolong latency, follow Intermountain’s Prevention of Perinatal GBS algorithm.)</td>
<td>&lt;ul&gt;&lt;li&gt;MAGNESIUM SULFATE, IV: Bolus 6 grams over 40 minutes, then infuse 2 grams/hour maintenance dose from premixed 20 gram/500mL bag until delivery or until 12 hours of therapy. (If preterm delivery seems unlikely after 12 hours of therapy, discontinue therapy).&lt;/li&gt;&lt;/ul&gt;</td>
</tr>
<tr>
<td><strong>Corticosteroid</strong>&lt;br&gt;to lower risk of RDS</td>
<td>&lt;ul&gt;&lt;li&gt;BETAMETHASONE: 12 mg IM every 24 hours x 2 doses.&lt;br&gt; If betamethasone isn’t available, may use dexamethasone: 6 mg IM every 12 hours X 4 doses.&lt;/li&gt;&lt;/ul&gt;</td>
</tr>
<tr>
<td><strong>Antibiotics</strong>&lt;br&gt;to prolong latency</td>
<td>&lt;ul&gt;&lt;li&gt;AMPICILLIN 2 grams IV every 6 hours and ERYTHROMYCIN 250 mg IV every 6 hours x 48 hours&lt;br&gt; followed by: AMOXICILLIN 250 mg PO every 8 hours for 5 days and ERYTHROMYCIN 333 mg PO every 8 hours for 5 days.&lt;br&gt; If penicillin allergy, low risk (e.g., isolated macupapular rash without urticaria or pruritis):&lt;br&gt; cefazolin 1 gram IV every 8 hours x 48 hours and ERYTHROMYCIN 250 mg IV every 6 hours x 48 hours&lt;br&gt; followed by: cephalixin 500 mg PO every 6 hours x 5 days and ERYTHROMYCIN 333 mg PO every 8 hours x 5 days&lt;br&gt; If penicillin allergy, high risk (e.g., anaphylaxis, angioedema, respiratory distress, urticaria):&lt;br&gt; vancomycin 1 gram IV every 12 hours x 48 hours and ERYTHROMYCIN 250 mg IV every 6 hours x 48 hours&lt;br&gt; followed by: clindamycin 300 mg PO every 8 hours x 5 days and ERYTHROMYCIN base 333 mg PO every 8 hours x 5 days&lt;/li&gt;&lt;/ul&gt;</td>
</tr>
</tbody>
</table>
RESOURCES

Patient and provider tools relating to management of this condition are available on the Clinical Programs website at: intermountain.net/clinicalprograms. Select the “Preterm Labor” topic page to access the following tools:

- This CPM
- PPROM order set
- Documents providing guidance re: other preterm labor and PROM concerns: GBS prophylaxis, magnesium sulfate for neuroprotection, etc.

See all of the Women and Newborns provider tools by choosing the “Clinical Guidelines and CPMs” link under the Women & Newborns heading in the lefthand navigation.

REFERENCES