

# PRETERM PRE-LABOUR RUPTURE OF MEMBRANES

## DEFINITION

Preterm pre-labour rupture of membranes (PPROM) is rupture of the membranes prior to established labour in women less than 37 completed weeks gestational age.

## ASSOCIATED RISKS OF PPROM

- Preterm labour
- Cord prolapse
- Placental abruption
- Intrauterine infection/chorioaminionitis
- Pulmonary hypoplasia
- Limb positioning defects
- Perinatal mortality

## DIAGNOSIS

The diagnosis of PPROM is based on maternal history followed by confirmation on sterile speculum examination. PPROM is often associated with subclinical infection.

Nitrazine testing (amnicator) may facilitate the diagnosis where there is uncertainty. Amnicator testing has sensitivity of 81.8%, specificity of 83.3%, positive predictive value of 52.6% and negative predictive value of 96.2%.<sup>1</sup> False positive results are possible with urine, blood, semen, bacterial infection; for example, bacterial vaginosis or Trichomonas. In the absence of observed liquor on speculum and a negative amnicator result, it is reasonable to assume the membranes are intact.

Ultrasound examination can be useful in some cases to confirm the diagnosis.

Digital examination should not be performed where PPROM is suspected.

## ASSESSMENT

### INITIAL EXAMINATION AND INVESTIGATION

- Maternal temperature, pulse and blood pressure
- General examination including abdominal palpation
- Palpate for uterine activity
- Sterile speculum without gel
  - Confirm obvious rupture of membranes (ROM)

- Amnicator may be used: ONLY if no obvious liquor seen.
- Take high vaginal swab (HVS)
- Mid-stream urine (MSU)
- Blood testing
  - Full blood count
  - CRP
- Other investigations as clinically indicated
- Ultrasound scan may be required to assess presentation, fetal growth and amniotic fluid volume
- Fetal monitoring
  - Cardiotocograph (CTG) may be appropriate beyond 28 weeks
  - Intermittent auscultation < 28 weeks

## MANAGEMENT

### INPATIENT MANAGEMENT

Women should be admitted initially for 72 hours and assessed six-hourly for signs of intrauterine infection. Maternal temperature, pulse and fetal heart rate auscultation should be monitored every 6 hours (during waking hours), or more frequently, if clinically indicated.

In the presence of ANY of the below, commence EFM and request obstetric review:

- Regular abdominal pains or tenderness
- change in colour of liquor
- Vaginal bleeding
- Reduced fetal movements

The criteria for the diagnosis of clinical chorioamnionitis include; maternal pyrexia, tachycardia, leucocytosis, uterine tenderness, offensive vaginal discharge, and fetal tachycardia.

If chorioamnionitis is suspected, senior obstetric review should be performed and birth planned following discussion with the Neonatal team.

Twice weekly CRP and WCC estimation may assist with the diagnosis of infection.

Ultrasound assessment of growth and amniotic fluid index should be performed every two to three week.

### MAGNESIUM SULPHATE FOR NEUROPROTECTION IN PRETERM BIRTHS <30 WEEKS

Magnesium sulphate given to women within a minimum of four hours before birth reduces the risk of cerebral palsy and protects gross motor function in those infants born preterm. The effect may be greatest at early gestations and is not associated with adverse long-term fetal or maternal outcome

Refer to [WCH/GLM0041 Magnesium Sulphate for Neuroprotection in Preterm Births < 30 Weeks](#) Guideline.

## PROPHYLACTIC ANTIBIOTICS

Antibiotic administration following PPROM is associated with a delay in birth and a reduction in major markers of neonatal morbidity. Research data supports the routine use of antibiotics in PPROM.<sup>2</sup>

As off 1 July 2013, NZ Hospital Medicines List changed. Erythromycin ethyl succinate 400 mg QID replaces erythromycin stearate 250 mg.

Erythromycin ethyl succinate (400 mg orally 6 hourly) should be given for 10 days following diagnosis of PPROM.<sup>3</sup>

Amoxicillin/Clavulanic Acid (Augmentin®) is **not recommended** for women with PPROM because of concerns regarding increased incidence of necrotising enterocolitis.<sup>3</sup>

## ANTIBIOTICS IN LABOUR (REGARDLESS OF GROUP B STREP STATUS)

GESTATION	ANTIBIOTIC THERAPY
32-37 weeks of gestation	<p><b>Amoxicillin</b> IV 2 g stat (in 10 0mL 0.9% sodium chloride over 30 minutes) <i>then</i></p> <p><b>Amoxicillin</b> IV 1 g 4 hourly until birth (in 20 mL 0.9% Sodium Chloride via slow push)</p>
With signs of infection <b>add</b>	<p><b>Gentamicin</b> 5 mg/kg OD IV infusion (if more than one dose required contact CWH pharmacist on Pager 5009 for advice on monitoring serum concentrations)</p> <p><b>and</b></p> <p><b>Metronidazole</b> 500 mg IV 8 hourly in labour (to consult with pharmacist if required postnatally)</p>
< 32 weeks of gestation in established preterm labour	<p><b>Amoxicillin</b> IV 2 g stat (in 100 mL 0.9% sodium chloride over 30 minutes) <i>then</i></p> <p><b>Amoxicillin</b> IV 1 g 4 hourly until birth. (in 20 mL 0.9% Sodium Chloride via slow push)</p> <p><b>and</b></p> <p><b>Gentamicin</b> 5 mg/kg OD IV infusion (if more than one dose required contact CWH pharmacist on Pager 5009 for advice on monitoring serum concentrations)</p>
With signs of infection <b>add</b>	<p><b>Metronidazole</b> 500 mg IV 8 hourly in labour (to consult with pharmacist if required postnatally)</p>
If the woman is allergic to penicillin (replace penicillin component with)	<p><b>Low risk of anaphylaxis<sup>1</sup></b> IV Cephazolin 2 g initially, then 1 g 8 hourly until birth</p> <p><b>High risk of anaphylaxis<sup>1</sup></b> Contact Clinical Drug Information ext. 80900 or the Ward Pharmacist</p>

<sup>1</sup> Low risk of anaphylaxis - women who do not have history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin

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## ANTENATAL CORTICOSTEROIDS

Antenatal corticosteroids should be administered in women with PPROM between 24<sup>+0</sup> and 34<sup>+6</sup> weeks at a dose of 11.4 mg Betamethasone (Celestone) IM 24 hourly to complete two doses.

When PPROM occurs between 23<sup>+0</sup> and 23<sup>+6</sup> weeks discuss with the neonatal team, who will be happy to see the woman and her family.

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## TOCOLYSIS

Prophylactic tocolysis in women with PPROM without uterine activity is not recommended.

Tocolysis is appropriate for women with uterine activity at less than 34<sup>+6</sup> weeks, to facilitate antenatal steroid administration.

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## OUTPATIENT MANAGEMENT

Women should be considered for outpatient monitoring of PPROM only after assessment and documented plan by a consultant obstetrician. There is insufficient data to make recommendations for outpatient monitoring, rather than continued hospital admission in women with PPROM.<sup>3</sup>

It is therefore reasonable for the woman to stay in hospital for at least 72 hours before discharge. If there are no signs of labour and all observations are satisfactory after 48-72hrs, the woman may be discharged home only after assessment by a consultant obstetrician.

Women should be advised of the signs and symptoms of chorioamnionitis these will include:

- Maternal Pyrexia (above 37.8°)
- Offensive vaginal discharge

If any of the above signs and symptoms occur or if there are reduced fetal movements or the woman has any other concerns she must contact her Lead Maternity Carer (LMC) immediately.

Women being monitored at home for PPROM should take their temperature twice daily and advised of the symptoms associated with uterine infection.

Women should be advised to abstain from sexual intercourse and to refrain from the use of tampons.

### **Twice weekly follow-up should be arranged in DAU.**

Ultrasound assessment of growth and amniotic fluid index should be performed every two to three week.

Twice weekly CRP and WCC estimation may assist with the diagnosis of infection.

If chorioamnionitis is suspected, senior obstetric review should be performed and birth planned following discussion with the Neonatal team.

## BIRTH OF THE BABY

There is insufficient current evidence to guide clinical practice on the benefits and harms of immediate birth compared with expectant management for women with PPROM<sup>4</sup>. There is no difference in neonatal sepsis, respiratory distress syndrome, cerebroventricular haemorrhage, necrotising enterocolitis, but an increase in caesarean section if delivered within 24 hours of rupture of membranes<sup>3</sup>. However the studies were underpowered to detect meaningful measures of neonatal morbidity and mortality.

There are currently two ongoing randomised controlled trials comparing intentional birth with conservative management in women with PPROM between 34<sup>+0</sup> and 36<sup>+6</sup> weeks of gestation. Until these results are available, there is no clear evidence to guide clinical practice. However, RCOG recommend birth can be considered after 34 weeks of gestation.<sup>3</sup>

In these circumstances, plans to birth ANY woman before 37 weeks, requires discussion between the obstetric and the neonatal team.

Women require a management plan agreed by the consultant obstetrician and counselling on the possible risks and benefits of expectant management versus active management which may include:

### Expectant management

- increased risk of chorioamnionitis and its consequences
- decreased risk of serious respiratory problems in the neonate

### Active management

- increased risk of admission for neonatal intensive care
- increased risk of caesarean section

Mode of birth is determined after discussion with the consultant obstetrician, the LMC and the woman, taking presentation and previous obstetric history into consideration.

## REFERENCES

1. De Meeus JB, Sima Ole B, Bascou V, Magnin G. Biological diagnosis of premature rupture of membranes: respective values of diamine oxidase activity compared to vaginal fluid pH (Amnicator). *J Gynecol Obstet Biol Reprod (Paris)*. 1997; 26(7):730-3.
2. S Kenyon, DJ Taylor, W Tarnow-Mordi. Broad spectrum antibiotic for Preterm-prelabour rupture of membranes: the ORACLE-1 randomised trial. *The Lancet* Vol 357: March 31st 2001.
3. Royal College of Obstetricians and Gynaecologists (RCOG). Preterm pre-labour rupture of membranes. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2006 Nov. 11 p. (Guideline; no. 44).
4. Buchanan SL, Crowther CA, Levett KM, Middleton P, Morris J. Planned early birth versus expectant management for women with preterm prelabour rupture of membranes prior to 37 weeks' gestation for improving pregnancy outcome. *Cochrane Database Syst Rev* 2010;(3):CD004735

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