# PRETERM PRE-LABOUR RUPTURE OF MEMBRANES – AFTER VIABILITY (>22 WEEKS)

## 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.

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)
- 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 have a full set of observations 4 hourly whilst in hospital. This may be increased to 8 hourly overnight if MEWS=0 on retiring.

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 weeks.

**Women with risk factors of < 26 weeks gestation, non-cephalic presentation and oligohydramnios are associated with increased risk complications including fetal demise, placental abruption, cord prolapse, delivery outside hospital and neonatal death. Hospital based care is recommended for women with all three factors[5].**

## 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 Magnesium Sulphate for Neuroprotection in Preterm Births < 30 Weeks (GLM0041) 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.[2]

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.[3]

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

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

| GESTATION | ANTIBIOTIC THERAPY |
|---|---|
| < 37 weeks of gestation | **Amoxicillin** IV 2 g q6h |
| With signs of infection **add** | **Gentamicin** 5 mg/kg OD IV infusion<br>(in 100 mL 0.9% Sodium Chloride over 30 minutes)<br>*(if more than one dose required contact CWH pharmacist on Pager 5009 for advice on monitoring serum concentrations)*<br>***and***<br>**Metronidazole** 500 mg IV (over 30 minutes) 12 hourly in labour<br>*(to consult with pharmacist if required postnatally)* |
| If the woman is allergic to penicillin, replace penicillin component with: | **Low risk of anaphylaxis***<br>Cephazolin IV 2 g 8 hourly until birth<br>**High risk of anaphylaxis***<br>Clindamycin IV 600mg q8h |

* *Low risk of anaphylaxis - women who do not have history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin*

## ANTENATAL CORTICOSTEROIDS

Antenatal corticosteroids should be administered at a dose of 11.4 mg Betamethasone (Celestone) IM 24 hourly to complete two doses.

1. Offered between 24+0 and 25+6 weeks of gestation. Large cohort studies demonstrate benefits of steroids for babies born between 24+0 and 25+6 weeks of gestation
2. Offered between 26+0 and 33+6 weeks of gestation. High quality evidence that steroids reduce the incidence of intraventricular haemorrhage and the need for mechanical ventilation in PPROM
3. Considered between 34+0 and 35+6 weeks of gestation. Given the high 'number needed to treat' and the potential side effects of steroids, administration should be evaluated on an individual basis

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

## TOCOLYSIS

Tocolysis is not recommended in PPROM as tocolysis does not significantly improve perinatal outcome and might be associated with an increased risk of chorioamnionitis[5]

## 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.[3]

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 weeks.

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

For women with PPROM with no contraindications to continuing the pregnancy, expectant management with careful monitoring is associated with better outcomes for the mother and baby. The Cochrane review found no differences between early birth and expectant management in neonatal sepsis or infection. Early delivery increased the incidence of respiratory distress syndrome and an increased rate of caesarean section. There were no differences in overall perinatal mortality or intrauterine deaths when comparing early delivery with expectant management. Early birth was associated with a higher rate of neonatal death and need for ventilation[6].

Women whose pregnancy is complicated by PPROM after 24+0 weeks' gestation and who have no contraindications to continuing the pregnancy should be offered expectant management until 37+0 weeks. Timing of birth should be discussed with each woman on an individual basis with careful consideration of patient preference and ongoing clinical assessment

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 antibiotis for Preterm-prelabour rupture of membranes: the ORACLE-1 randomised trial. The lancet Vol 357: March 31st 200l.
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
5. Care of Women Presenting with Suspected Preterm Prelabour Rupture of Membranes from 24+0 Weeks of Gestation. RCOG Green top guideline 73, 2019
6. Bond DM, Middleton P, Levett KM, van der Ham DP, Crowther CA, Buchanan SL, et al. 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 of Syst Rev2017; CD004735