HUTT maternity
Hutt Valley Maternity Care

HUTT VALLEY DHB

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Pre Term Pre-Labour Spontaneous Rupture of Membranes (Less Than 37 Weeks) Policy

Hutt Maternity Policies provide guidance for the midwives and medical staff working in Hutt Maternity Services. Please discuss policies relevant to your care with your Lead Maternity Carer.

Introduction

Preterm pre-labour rupture of membranes (PPROM) is defined as rupture of the membranes prior to the onset of labour in women before 37 weeks of gestation.

It complicates 1-2% of all pregnancies, and is associated with 30-40% of preterm births (Bond 2017). Worldwide an estimated 15 million babies are born preterm, and the number is rising. Preterm birth complications are the leading cause of death globally among children under 5 years of age, responsible for approximately 1 million deaths in 2015 (WHO 2018). Even in developed countries such as the UK, preterm birth is still the single biggest cause of neonatal morbidity and mortality, affecting around 7.3% of live births in England and Wales in 2012 (NICE 2015). In New Zealand in 2015, approximately 77% of fetal deaths and 60% of infant deaths registered in 2015 were preterm, the majority of which were very preterm (< 28 weeks gestation) (MOH 2018).

Purpose

This guideline outlines the practice that relates to the management of pre-term prelab our spontaneous rupture of membranes (PPROM).

Guideline

The clinical significance of SRM varies with the gestational age and the time interval between the SRM and birth. Pre-term pre-labour SRM are more likely to be triggered by underlying infection (RCOG, 2010). Prolonged SRM delivery intervals increase the risk of chorioamnionitis and perinatal morbidity and mortality. Optimal clinical management needs to factor into account the full clinical presentation, results of investigations and ongoing clinical developments. Gains in fetal maturity and / or hopes to avoid an intervention cascade following induction of labour, must be balanced with the need to avert significant perinatal sepsis.

Scope

All medical, midwifery and nursing staff employed by Hutt Valley DHB. All Hutt Valley DHB Maternity access holders.

Definitions

Pre-term pre-labour rupture of membranes, also referred to as PPROM, is the spontaneous rupture of membranes (SRM) prior to established labour, at a gestational age of less than 37+0 weeks.

Principles of care for PPROM

- Establishing a diagnosis
- Exclude underlying infection or haemorrhage
- If SRM associated with PV bleeding, **vasa praevia** must be considered
- Exclude malposition
- If **cord prolapse** suspected, a digital examination is required urgently
- Management in accordance with gestational age

Associated risks of PPROM

The risks associated with PPROM depend upon the gestation it occurs at, but may include:

- Preterm birth
- Cord prolapse
- Placental abruption
- Intrauterine infection / chorioamnionitis
- Pulmonary hypoplasia
- Limb positioning defects
- Neonatal prematurity complications: death, respiratory distress syndrome, chronic lung disease, intraventricular haemorrhage, necrotising enterocolitis, retinopathy
- Perinatal mortality

Diagnosis, Assessment & Initial Investigations

Diagnosis of spontaneous rupture of membranes is primarily based on maternal history.

It is recommended that all women with term PROM should have a comprehensive assessment, to check maternal and fetal wellbeing.

- Confirm gestational age – review the dating method e.g. early versus late scan, or by LMP
- If SRM associated with PV bleeding – **vasa praevia** must be considered
- Ascertain whether there is meconium-stained liquor (unlikely as preterm)
- Maternal temperature, pulse, blood pressure, respiratory rate and oxygen saturations (consider signs of intra-uterine infection / chorioamnionitis)
- General examination
- Palate for uterine activity
- General examination, including abdominal palpation
- If SROM is not obvious then a sterile speculum is advisable to confirm membrane rupture
    - Perform examination after woman has rested for at least 30 minutes to allow any leakage of liquor to pool in posterior vaginal fornix
    - Look for liquor or ‘washed-out’ appearance to vagina
    - If diagnosis is uncertain, Amnicator® (nitrazine pH indicator) or AmniSure® (placental alpha microglobulin-1 (PAMG-1)) testing may facilitate diagnosis
- **Take a combined low vaginal & rectal swab for Group B Streptococcus** (‘GBS swab’) ± high vaginal & chlamydial swabs if indicated

    - Need to specify on request form that this is for GBS screening
- **Avoid routine digital examination** (unless **cord prolapse** is suspected)
- Mid-stream urine (MSU)
- Fetal monitoring
    - CTG at 28+0 weeks or beyond
    - Intermittent auscultation under 28 weeks may be more appropriate
- Bedside ultrasound (by obstetric RMO or SMO) to assess presentation (increased chance of abnormal lie)
- Blood tests: FBC, CRP, Group & Hold
- Exclude Malpresentation – perform a bedside ultrasound if any concerns

Obstetric Referral Guidelines ('Section 88') considerations

As per the Ministry of Health 2012 Obstetric Referral Guidelines:

Code	Condition	Description	Referral category
4023	Preterm rupture of membranes	< 37 weeks and not in labour	Consultation
4025	Premature labour	34+0 to 36+6 weeks	Consultation
4026		< 34+0 weeks	Transfer

Rupture of Membranes not confirmed

In the absence of observed liquor on speculum and a negative Amnicator® or Amnisure® test, it is reasonable to assume the membranes are intact.

If the history is suspicious but with negative clinical findings, then discharge the woman home with advice to:

- Carefully monitor vaginal discharge with pads over the next few days
- Liaise with LMC / Community Midwifery Team if any further concerns

Ruptured Membranes confirmed

Follow guideline as seen in Appendix

Predictors of Clinical Intrauterine Infection/Chorioamnionitis

Vaginal examinations (VEs) have been shown to be the strongest predictor of clinical chorioamnionitis for women with PROM, with increasing rates from three to four VEs (7-8 VEs versus 0-2, OR 2.37, p=0.04).[5]

Vaginal examinations prior to labour and/or induction of labour are to be avoided unless strictly indicated.

Diagnosing Intrauterine Infection/Chrioamnionitis

Use a combination of clinical assessment and tests (WBC and/or CRP rise, CTG) to diagnose intrauterine infection / chorioamnionitis in women with PPROM.

The criteria for the diagnosis of clinical chorioamnionitis include:

- Maternal pyrexia
- Maternal tachycardia
- Uterine tenderness
- Offensive vaginal discharge
- Fetal tachycardia ± otherwise non-reassuring CTG

Management of PPROM - Principles

Steroids for fetal lung maturation

All women under 35 week's gestation (i.e. 34+6 weeks or less) should receive betamethasone (Celestone Chronodose®) 11.4mg IM (2 x 5.7mg ampoules) for fetal lung maturation, primarily to reduce the risk of respiratory distress syndrome (NICE 2015, Liggins Institute 2015, Roberts 2017).

Administering two doses of betamethasone approximately 24 hours apart is the usual practise. If, however, a woman is judged to be at very high-risk of delivering in less than 24 hours, administering the second dose 12 hours after the first is reasonable.

Antenatal steroids are most effective in reducing RDS in pregnancies that delivery 24 hours later and up to 7 days after administration of the second dose of antenatal steroids. Their use reduces neonatal death within the first 24 hours and therefore should still be given even if delivery is expected within this time. (RCOG 2010)

Nifedipine for tocolysis

Offer nifedipine for tocolysis to women under 35+0 weeks gestation who have both confirmed PPROM and uterine activity to facilitate the administration of betamethasone for fetal lung maturation, or at any gestation if transfer to another hospital is required e.g. due to a lack of SCBU beds at Hutt Hospital.

There is no evidence to support tocolysis if there is no uterine activity. It can be started later if uterine activity commences after admission but prior to completing antenatal steroids.

Tocolysis should continue for approximately 24 hours after the second dose of steroids and then stopped. There is no benefit from continuing after this, unless hospital transfer is being planned.

Very low quality evidence suggests that nifedipine tocolysis reduced perinatal mortality, neonatal sepsis and intraventricular haemorrhage, whilst it is no better than placebo at delaying birth by more than 48 hours. (NICE 2015).

A Cochrane review (Mackeen 2014) looking at tocolytics for preterm premature rupture of membranes suggested that there is insufficient evidence to support tocolytic therapy for women with PPROM. The meta-analysis showed an increase in maternal chorioamnionitis without significant benefits to the baby. The studies, however, did not consistently administer latency antibiotics (i.e. erythromycin) and corticosteroids, both of which are now considered standard care.

Care should be taken if nifedipine is being used in conjunction with magnesium sulphate, as both are calcium channel blockers and rarely 'flash' pulmonary oedema can be triggered.

Contra-indications to nifedipine tocolysis

- Cardiac disease (myocardial infarction in previous seven days)
- Porphyria
- Severe hypotension

Contra-indications to tocolysis

- Gestational age ≥ 35+0 weeks `
- Significant vaginal bleeding or suspected abruption
- Intrauterine infection / chorioamnionitis
- Fetal anomaly not compatible with life
- Maternal indication for birth exists e.g. eclampsia, pre-eclampsia
- Pathological fetal heart rate tracing

- Maternal decline of treatment

Erythromycin

Antibiotic administration following confirmed PPROM is associated with a delay in birth and a reduction in major markers of neonatal morbidity (Kenyon 2001).
Preterm babies are at risk of neonatal *E. coli* and Group B Streptococcus sepsis, so antibiotics are recommended to all women who are in established preterm labour.
A Cochrane review (Kenyon 2013) concluded that the routine prescription of antibiotics for women with preterm rupture of membranes is associated with prolongation of pregnancy and improvements in a number of short-term neonatal morbidities (neonatal infection, use of surfactant, oxygen therapy and abnormal cerebral ultrasound scan prior to discharge from hospital), but no significant reduction in perinatal mortality.

Offer women with confirmed PPROM **erythromycin 500mg (400mg tablets no longer available) orally 4 times a day for 10 days** or until the woman is in established labour, whichever is sooner (NICE 2015). Do not offer if membranes are intact as shown to be associated with increased chance of neurodevelopmental issues (Oracle follow-up find reference).

If unable to tolerate oral erythromycin, consider oral penicillin for 10 days or until the woman is in established labour, whichever is sooner (NICE 2015).
Do not offer co-amoxiclav (Augmentin™) as prophylaxis for intrauterine infection – it is associated with an increased risk of neonatal necrotising enterocolitis (Kenyon 2008).
The benefits from antibiotics may not be entirely from their bactericidal properties, but also the reduction in associated inflammatory damage (NICE 2015).

Magnesium sulphate for fetal neuroprotection

In women at risk of early preterm (under 30+0 weeks gestation) imminent birth, use magnesium sulphate for fetal neuroprotection, as per the Australasian 2010 guidelines (The Antenatal Magnesium Sulphate for Neuroprotection Guideline Development Panel 2010). Requires one – one care to start. Prioritise transfer or mag sulph?
Magnesium sulphate should be given

- 4g IV loading dose, given slowly over 20-30 minutes
- 1g IV per hour maintenance dose

Continue regimen until birth or for 24 hours until transfer, whichever comes first.

Mode of delivery

In the absence of fetal or maternal compromise or other obstetric factors necessitating a Caesarean, vaginal delivery is usually indicated.
Explain to women that Caesarean section at preterm gestations, especially very early preterm, can be technically challenging. There is an increased likelihood of a vertical uterine incision and thus the consequent implications of this for future pregnancies (NICE 2015).
Consider Caesarean section for women presenting in suspected, diagnosed or established preterm, labour between 26+0 and 36+6 weeks or pregnancy with breech presentation (NICE 2015).

Management of PPROM – Gestation Considerations

Once rupture membranes are confirmed, the management will depend upon the gestation at which PPROM has occurred. Please refer to Appendix for flow diagram.

Under 32 week's gestation

Women under 32 weeks will need **transferring to Wellington Hospital** as Hutt Hospital does not accept neonates less than 32+0 weeks gestation.
Wellington Hospital has a different management approach to PPROM than Hutt Hospital (Wellington guideline) and, indeed, the 2014 New Zealand Consensus Guidelines (Darlow 2015). Given that all of these women will be transferred it seems prudent to initiate their management as it will continue. Therefore, women will commence intravenous amoxicillin for 48 hours prior to switching to oral erythromycin for 10 days.
If under 30+0 weeks consider the use of magnesium sulphate for fetal neuroprotection, as per the 2010 guidelines (The Antenatal Magnesium Sulphate for Neuroprotection Guideline Development Panel 2010).

32+0 to 34+6 week's gestation

- Steroids for fetal lung maturation
- Nifedipine tocolysis if indicated
- Erythromycin 500mg QID orally for 10 days
- Benzyl penicillin IV once in labour or induction commenced, as per protocol
- Admit to hospital for 2-3 days for observation
- Then consider out-patient management
- Recommend induction of labour at 37+0 weeks if not indicated earlier

35+0 to 36+6 week's gestation

- Erythromycin 500mg QID orally for 10 days
- Benzyl penicillin IV once in labour or induction commenced, as per protocol
- Admit to hospital for 2-3 days for observation
- Then consider out-patient management
- Recommend induction of labour at 37+0 weeks if not indicated earlier

In-Patient Management

Women should be admitted for initially 72 hours (3 days) for observation.
Complete the course of steroids and tocolysis as appropriate.
Maternal temperature and pulse should be monitored every six hours whilst awake (approximately 0700h, 1200h, 1800h and 2300h), and a CTG be performed twice a day. These investigations can be performed more frequently if indicated.
Organise an in-patient growth scan with liquor volume and umbilical artery Doppler indices within a few days of admission.
Advise woman to avoid sex, the use of tampons and immersion in water (e.g. taking a bath).
The presence of any of the following should be a trigger to commence CTG monitoring and request obstetric review:

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

A high-index of suspicion for possible intrauterine infection / chorioamnionitis should be considered at all times.

If chorioamnionitis is suspected, urgent Obstetric RMO review should be requested, and discussed with the Obstetric SMO on-call ± Paediatric RMO / SMO on-call

Weekly vaginal swabs, mid-stream urines (MSU) and maternal bloods (FBC and CRP) do not need to be done because the sensitivity of these tests in the detection of intrauterine infection / chorioamnionitis is low (RCOG 2010). Perform only if clinical suspicion of chorioamnionitis.

Out-Patient 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 (Abou El Senoun 2014).
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 – a temperature above 37.8°C
- Offensive vaginal discharge

If any of the above signs and symptoms occur, 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.

Investigations

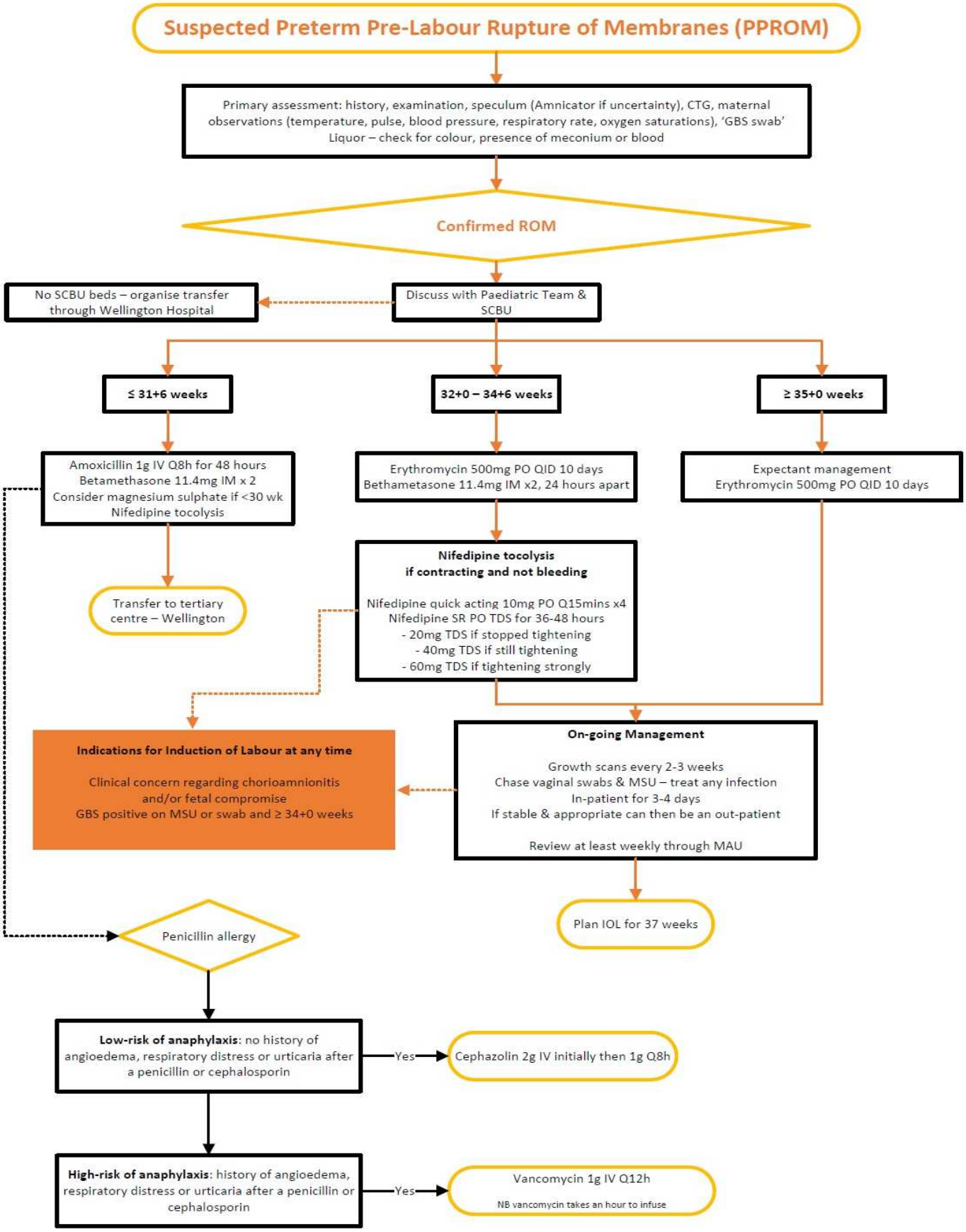
Twice weekly follow-up should be arranged in MAU.
Ultrasound assessment of growth, liquor volume and umbilical Doppler indices should be performed every two weeks.
Weekly vaginal swabs, mid-stream urines (MSU) and maternal bloods (FBC and CRP) do not need to be done because the sensitivity of these tests in the detection of intrauterine infection / chorioamnionitis is low (RCOG 2010). They may be considered if clinically suspicious of infection, however.
If chorioamnionitis is suspected, senior Obstetric review should be performed and birth planned following discussion with the Paediatric team.

Induction of Labour

If a woman has not either spontaneously laboured or needed delivery prior, recommend induction of labour (assuming baby is cephalic and no other contra-indications) at 37+0 weeks.

Appendix

Appendix 1 – PPROM flow chart



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Informed Consent

The right of a consumer to make an informed choice and give informed consent, including the right to refuse medical treatment, is enshrined in law and in the Code of Health and Disability Consumers' Rights in New Zealand. This means that a woman can choose to decline treatment, referral to another practitioner, or transfer of clinical responsibility. If this occurs follow the process map on page 18 of the Referral Guidelines (Ministry of Health, 2012).