Document No: 43549

TITLE: Pre-Labour Rupture of Membranes Guideline (Includes Term and pre-term Rupture of Membranes)

1. Statement/Purpose/Description

To provide guidance to all care providers caring for women with pre-labour rupture of membranes (PROM) from 24 weeks gestation

2. Scope

All Lakes District Health Board medical and midwifery staff and LMCs

3. Definitions

CTG	Cardio-Tocography
DHB	District Health Board
EOGBS	Early Onset Group B Strep
FBC	Full Blood Count
GBS	Group B Streptococcus
HR	Heart Rate
Hrs.	Hours
IAP	Intrapartum Antibiotic Prophylaxis
IOL	Induction of Labour
IV	Intravenous
LMC	Lead Maternity Carer
mg	Milligrams
PROM	Term Prelabour Rupture of Membranes
PPROM	Preterm Premature Rupture of Membranes
ROM	Rupture of Membranes
SROM	Spontaneous Rupture of Membranes
USS	Ultrasound Scan
VE	Vaginal Examination

4. Procedure/Management

This guideline should be used in association with Lakes District Health Board Group B Streptococcus (GBS) infection guidelines, No. 333970.

4.1 Diagnosis of rupture of membranes

- Confirmation of spontaneous rupture of membranes should be achieved by eliciting the maternal history, checking the woman's pad, and performing a sterile speculum examination to visualise liquor pooling in the posterior vaginal fornix.
- In the situation of suspected pre-term ROM <34 weeks, the LMC should consider requesting support from the obstetric team for diagnosis of ROM.
- A digital vaginal examination should be avoided unless the woman is felt to be in active labour or immediate induction is planned as this has been shown to increase the risk of chorioamnionitis and neonatal infection.
- An ultrasound examination demonstrating oligohydramnios may also be helpful.

4.2 Maternal Assessment and management for PROM

- Confirm gestation and presentation by reviewing any available scan results and the clinical notes
- Initial examination and investigation:
  - ✓ Maternal temperature, pulse, and blood pressure, respiration rate
  - ✓ General examination including abdominal palpation for fetal lie, presentation, tenderness, and contractions
  - ✓ Note any liquor volume, colour, or odour from pad and document findings
  - ✓ Sterile speculum without lubrication Prior to this examination, the woman should be lying flat for at least 30 minutes to enable liquor to pool in the posterior fornix.
  - ✓ Confirm obvious ROM
  - ✓ An Amni-sure® test may be performed at the time of this examination where there is diagnostic uncertainty, as per the manufacturer's instructions.
  - ✓ Obtain High Vaginal, Low Vaginal, Urine dipstick +/- MSU if indicated
  - ✓ FHR auscultation +/- CTG if any indication
  - ✓ Identify any history of a cervical suture/cerclage procedure and any recent vaginal examinations
- A baseline fetal heart auscultation at diagnosis of ROM should be performed and, where indicated, a CTG to characterise fetal wellbeing and uterine activity APPENDIX 1
- If the woman has risk factors for Group B streptococcus please refer to the GBS infection guidelines and follow the recommended treatment regimen. Women with term PROM who are GBS positive are recommended to have active management.
- Women with term ROM are eligible for expectant management at home, where they meet the following criteria:
  - ✓ No antepartum risk factors for GBS
  - ✓ Term with a fixed cephalic presentation
  - ✓ Clear liquor
  - ✓ Normal fetal movements
  - ✓ No signs of infection (maternal tachycardia >100bpm, fever, uterine tenderness)
  - ✓ Has NOT had a digital VE or cervical suture

- ✓ Has a telephone
- ✓ Lives <40 minutes away
- ✓ Able to get transport to and from the hospital easily
- ✓ Is able to commit to 4 hourly maternal temperature, evaluation of vaginal loss and assessment of fetal well-being

- If, after discussion, the woman desires conservative management, recommend 4-hourly observations of maternal temperature, pulse, liquor appearance, and monitoring of fetal wellbeing. She should be advised to avoid intercourse, baths, or the use of tampons. An IOL should be booked for 24 hours post rupture of membranes. Women should be advised of the signs and symptoms of chorioamnionitis, including maternal pyrexia ≥37.8˚C, HR >100, offensive vaginal discharge, abdominal pain, and/or a change in fetal movements. Women should be advised to call their LMC in the first instance for any concerns, and present to hospital.

- If conservative management is appropriate and chosen there is no indication for antibiotics prior to commencement of labour or induction of labour. Antibiotics should be commenced at 24 hours after ROM if in labour or when induction of labour commences. Please refer to the GBS guideline for more information.

  First-line
  - IV Benzylpenicillin initial dose 1.2g, then 0.6g q4 hourly until birth
  - If Benzylpenicillin is unavailable, IV amoxicillin 2g, then 1g q4 hourly until birth

  Second-line
  - Allergy to penicillin with a low risk of anaphylaxis (women who do not have a history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin)
  - Cephazolin initial dose 2g IV, then 1g q8 hourly until birth

  Third-line
  - Allergy to penicillin with a high risk of anaphylaxis (women who do have a history of anaphylaxis, angioedema, respiratory distress or urticaria after a penicillin or a cephalosporin)
  - Vancomycin initial dose 1g IV, then 1g q12 hourly until birth
  - Erythromycin and clindamycin are not recommended due to increasing resistance patterns

- If active management is chosen, induction of labour can be either by prostaglandin or oxytocin use, with oxytocin preferred (due to lower associated rates of infection) but prostaglandins are useful in women with an unfavourable cervix following a risk-benefit assessment. The available evidence to recommend oxytocin vs. prostaglandins in the context of Term PROM is limited- further trials are needed. Misoprostol may have a role in this context in the future as some trials suggest it has a lower risk of uterine hyperstimulation.

- Vaginal examinations (VEs) have been shown to be the strongest predictor of clinical chorioamnionitis for women with PROM, with increasing rates from 3-4 VEs and should be minimised in labour.

- Women with signs of infection in association with PROM at term require urgent Obstetric assessment and immediate IV broad spectrum antibiotics. Signs of infection may include fever, maternal or fetal tachycardia, leucocytosis, uterine tenderness, and offensive vaginal discharge. Birth should be expedited in the manner that is most suitable for the clinical situation.

4.3 Term pre-labour rupture of membranes

Please see APPENDIX 1 APPENDIX *for a summary of this guidance*

- The incidence of term PROM is 8%. Spontaneous labour follows term PROM within 24 hours, 48 hours, and 96 hours in 70%, 85%, and 95% of women, respectively.
- In the event of term PROM, LMCs should review risk factors for Group B Streptococcus (as per the GBS infection guidelines) and consult with the Obstetric team within 24 hours, as per Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines).
- The woman, LMC, and Obstetrician should discuss options, including the risks and benefits of active management versus waiting for up to 24 hours for labour to establish. The woman will make the final decision based on the information received as per Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines).
- Planned early birth (through oxytocin administration) leads to reduced rates of maternal chorioamnionitis/sepsis, reduced neonatal intensive and special care admissions, lower rates of early-onset neonatal sepsis, lower rates of neonatal antibiotic use, and greater maternal satisfaction. Mode of delivery is not compromised by choosing either planned early birth or expectant management, with equal rates of Caesarean section and instrumental deliveries.

4.4 Pre-term pre-labour rupture of membranes between 24+/40 to 36+6/40

Please see APPENDIX 1 for a summary of this guidance

- In the absence of complications, current studies recommend conservative management until 37/40 gestation. The PPROMT trial data suggests there is neonatal benefit to conservative management between 34-37/40 for pre-labour ROM.
- Consultation with the Obstetric team is required under Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines). For gestations between 22+5/40 and 24/40 further consultation with the Obstetric team with the Paediatric team for patient counselling is recommended.
- PPROM complicates only 2% of pregnancies but is associated with 40% of preterm deliveries.
- Initial examination and investigation:
  - ✓ Maternal temperature, pulse, and blood pressure
  - ✓ General examination including abdominal palpation for fetal lie, presentation, tenderness, and contractions
  - ✓ Note any liquor volume, colour, or odour from pad and document findings
  - ✓ Sterile speculum without lubrication
  - ✓ Confirm obvious ROM
  - ✓ Use Amni-sure® if uncertain of ROM
  - ✓ Visualise the cervix to estimate dilation
  - ✓ Take high vaginal and endocervical swabs
  - ✓ Take a GBS combined low vaginal/anorectal swab
  - ✓ Mid stream urine
  - ✓ Blood testing: group and hold, FBC, CRP
  - ✓ Consider USS for fetal presentation, fetal growth and amniotic fluid volume
  - ✓ Fetal monitoring:

- ✓ FHR auscultation <28 weeks
- ✓ CTG >28 weeks
- ✓ Identify any history of a cervical suture/cerclage procedure and any recent vaginal examinations

- Antenatal corticosteroids (11.4mg Betamethasone IM at diagnosis and a repeat 24 hours later) are recommended for all women with preterm ROM up until 34+6/40
- Women at gestations <32 weeks for singletons and <34 weeks for twin gestations need to be transferred to a tertiary unit and staff should follow the Waikato referral pathway by calling the ACM in the first instance
- Nifedipine Tocolysis should be given if contractions are present to enable completion of steroids. Consideration should be given to the administration of Nifedipine Tocolysis for transfer to a tertiary unit.
- Magnesium sulphate should be used for women in whom preterm birth at <30 weeks is considered likely within the next 24 hours. Magnesium sulphate should be given within a minimum of 4 hours before birth to reduce the risk of cerebral palsy and protect gross motor function in preterm infants. There is no evidence of adverse long-term fetal or maternal outcomes.
- Women who are not transferred to a tertiary unit should be admitted to hospital and observed for at least 48-72 hours. 4-hourly observations should include maternal temperature, BP, HR, liquor colour, and fetal well-being. Daily CTGs are recommended whilst inpatient. Some women may be eligible for outpatient management on a case-by-case basis after consultant review.
- Women eligible for outpatient management should be advised of the signs and symptoms of chorioamnionitis, including maternal pyrexia ≥37.8˚C, HR >100, offensive vaginal discharge, abdominal pain, and/or a change in fetal movements. Women should be advised to avoid intercourse, baths, or the use of tampons. Women should be advised to call their LMC in the first instance for any concerns. On discharge, women should check their temperature twice daily. Women should be seen twice weekly in DAU and USS assessments of growth and amniotic fluid volume should be performed every 2-3 weeks. Twice weekly FBC and CRPs should be done to assist with the diagnosis of infection. Women eligible for outpatient management should live close to the hospital; have adequate support, a telephone, and means of transportation.
- Oral antibiotics should be commenced at diagnosis of pre-labour ROM. Erythromycin ethyl succinate 400mg PO QID should be prescribed for 10 days following ROM. The aim is to prolong the pregnancy and to reduce the risk of chorioamnionitis, perinatal morbidity, neonatal sepsis, necrotising enterocolitis and respiratory distress syndrome. Amoxycillin/Clavulanic acid should be avoided in women with ROM because of concerns regarding increased incidence of necrotising enterocolitis.
- Preterm labour is an indication for IV antibiotics in labour for GBS prophylaxis.

First-line

* IV Benzylpenicillin initial dose 1.2g, then 0.6g q4 hourly until birth
* If Benzylpenicillin is unavailable, IV amoxicillin 2g, then 1g q4 hourly until birth

Second-line

* Allergy to penicillin with a low risk of anaphylaxis (women who do not have a history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin)
* Cephazolin initial dose 2g IV, then 1g q8 hourly until birth

Third-line

- Allergy to penicillin with a high risk of anaphylaxis (women who do have a history of anaphylaxis, angioedema, respiratory distress or urticaria after a penicillin or a cephalosporin)
- Vancomycin initial dose 1g IV, then 1g q12 hourly until birth
- Erythromycin and clindamycin are not recommended due to increasing resistance patterns

- If there are any signs of intrauterine infection, a consultant review is indicated as well as the commencement of broad-spectrum antibiotics. Birth should be expedited in the manner that is most suitable for the clinical situation.

4.5 GBS Risk factors present

- Women with risk factors for GBS who are well with SROM at term are at higher risk of having a baby affected by EOGBS infection. After LMC assessment, consultation with the Obstetrician must occur and women should be offered an induction of labour as soon as practicable. IAP should begin at the commencement of the induction of labour.
- Vaginal examinations should be avoided until labour is established and effort should be made to avoid repeated vaginal examinations in labour as these are known to increase the risk of chorioamnionitis and neonatal infection.

Recommended antibiotic regimes for intra-partum antibiotic prophylaxis

First-line
- IV Benzylpenicillin initial dose 1.2g, then 0.6g q4 hourly until birth
- If Benzylpenicillin is unavailable, IV amoxicillin 2g, then 1g q4 hourly until birth

Second-line
- Allergy to penicillin with a low risk of anaphylaxis (women who do not have a history of anaphylaxis, angioedema, respiratory distress or urticaria after penicillin or a cephalosporin)
- Cephazolin initial dose 2g IV, then 1g q8 hourly until birth

Third-line
- Allergy to penicillin with a high risk of anaphylaxis (women who do have a history of anaphylaxis, angioedema, respiratory distress or urticaria after a penicillin or a cephalosporin)
- Vancomycin initial dose 1g IV, then 1g q12 hourly until birth
- Erythromycin and clindamycin are not recommended due to increasing resistance patterns

4.6 Neonatal assessment
Please refer to the GBS infection guidelines for more detail

5. Points to Note
New Zealand has a unique maternity service. Within this framework the Code of Health and Disability Services Consumer Rights (HDC Regulations 1996) must be recognised.

The duration of ruptured membranes before action is taken must involve a three way conversation between the woman, LMC, and obstetrician taking clinical details into account as per Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines).

The short term risks of rupture of membranes include cord prolapse, cord compression, and placental abruption. Longer-term risks of delayed delivery include maternal and neonatal infection.

The three causes of neonatal death associated with PPROM are prematurity, sepsis, and pulmonary hypoplasia. Women with intrauterine infection deliver at earlier gestations than non-infected women and infants born with sepsis have a mortality rate four times higher than those without sepsis. Maternal chorioamnionitis is also a leading cause of maternal mortality and morbidity world-wide.

Normal newborn feeding as per mother's choice should continue as per "Ten Steps to Successful Breastfeeding" unless the newborn's condition dictates otherwise.

6. References

- ADHB. 2011. Rupture of membranes in pregnancy. http://nationalwomenshealth.adhb.govt.nz/Portals/0/Documents/Policies/Rupture%20of%20Membranes%20in%20Pregnancy_.pdf
- CDHB. 2017. Preterm pre-labour rupture of membranes. https://www.cdhb.health.nz/wp-content/uploads/76c0ce6f-glm0028-preterm-pre-labour-rupture-of-membranes.pdf
- CDHB. 2017. Pre-labour rupture of membranes at term. https://www.cdhb.health.nz/wp-content/uploads/b6529f4e-glm0043-pre-labour-rupture-of-membranes-at-term-231027.pdf
- Darlow, B., et al. 2015. The prevention of early-onset neonatal group B streptococcus infection: New Zealand consensus guidelines 2014. NZJM, 128(1425)
- Qiagen. Amnisure ROM test instructions for use. https://www.qiagen.com/us/resources/resourcedetail?id=c9824074-78f4-4c30-a933-2a313ce21656&lang=en
- Lakes DHB. 2018. Group B streptococcus (GBS) infection guidelines (TBC)
- Lakes DHB. 2015. Rupture of membranes guideline. EDMS 43549
- Morris et al. 2016. Immediate delivery with compared with expectant management after preterm prelabour rupture of the membranes close to term (PPROMT trial): a randomised controlled trial. Lancet, 387(10017).
- RANZCOG 2014. Intrapartum Fetal Surveillance. https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Intrapartum-Fetal-Surveillance-Guideline-Third-edition-Aug-2014.pdf?ext=.pdf
- RANZCOG. 2010. Term prelabour rupture of membranes (term PROM). https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Term-Prelabour-Rupture-of-Membranes-(Term-Prom)-(C-Obs-36)-review-2017.pdf?ext=.pdf
- Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines) Public Health and Disability Act 2000

Prepared By: **O&G Guidelines Group**

Authorised By: **O&G Guidelines Group**

APPENDIX 1: ALGORITHM FOR PRE-LABOUR RUPTURE OF MEMBRANES (PROM)

To be read in conjunction with Pre-Labour Rupture of Membranes Guideline Document No. 43549