Policy

Clinical Guideline

Preterm Prelabour Rupture of the Membranes Clinical Guideline

Policy developed by: SA Maternal & Neonatal Clinical Network
Approved SA Health Safety & Quality Strategic Governance Committee on:
07 September 2015
Next review due: **30 September 2018**

Summary Clinical practice guideline for the management of preterm prelabour rupture of the membranes.

Keywords PPROM, preterm prelabour rupture of the membranes, preterm, threatened preterm labour, liquor, pooling, speculum, ferning, chorioamnionitis, clinical guideline

Policy history
Is this a new policy? **N**
Does this policy amend or update an existing policy? **Y v9.0**
Does this policy replace an existing policy? **N**

Applies to
All SA Health Portfolio
All Department for Health and Ageing Divisions
All Health Networks
CALHN, SALHN, NALHN, CHSALHN, WCHN, SAAS

Staff impact
All Staff, Management, Admin, Students, Volunteers
All Clinical, Medical, Nursing, Allied Health, Emergency, Dental, Mental Health, Pathology

PDS reference CG142

Version control and change history

Version	Date from	Date to	Amendment
1.0	10 May 2004	26 Feb 2007	Original version
2.0	26 Feb 2007	19 Mar 2007	Reviewed
3.0	19 Mar 2007	20 Sep 2007	Reviewed
4.0	20 Sep 2007	30 Dec 2008	Reviewed
5.0	30 Dec 2008	25 May 2010	Reviewed
6.0	25 May 2010	18 Oct 2010	Reviewed
7.0	18 Oct 2010	22 May 2012	Reviewed
8.0	22 May 2012	20 May 2014	Reviewed
9.0	20 May 2014	07 Sept 2015	Reviewed
10.0	07 Sept 2015	Current	

Government of South Australia
SA Health

South Australian Perinatal Practice Guidelines

preterm prelabour rupture of the membranes

Note

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

SA Health does not accept responsibility for the quality or accuracy of material on websites linked from this site and does not sponsor, approve or endorse materials on such links.

Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:
The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

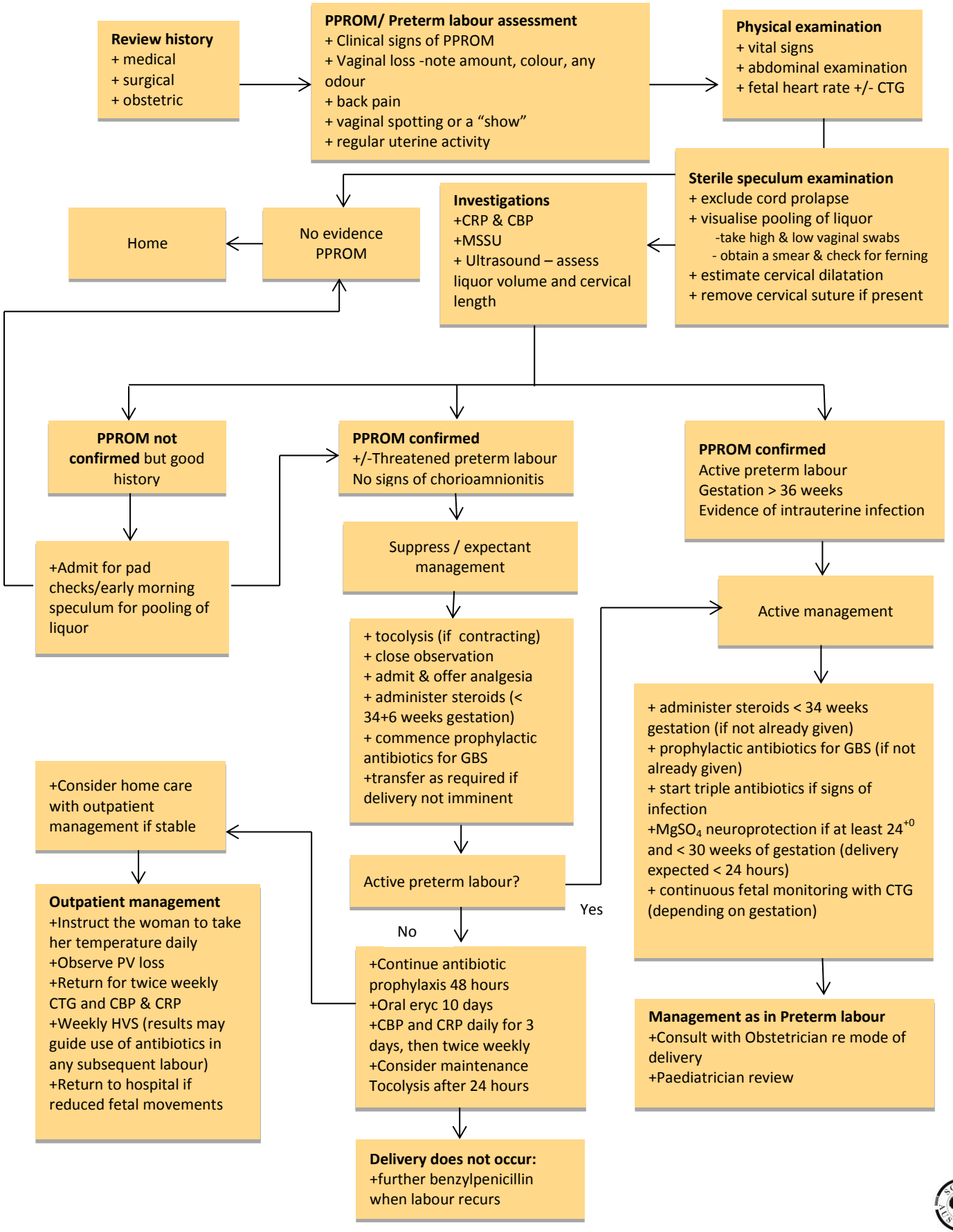
Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectively manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at:
HealthCYWHSPerinatalProtocol@sa.gov.au

Government of South Australia
SA Health

Preterm prelabour rupture of the membranes

Assessment and management of Preterm prelabour rupture of the membranes (PPROM)



ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 04/08/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at:
HealthCYWHSPerinatalProtocol@sa.gov.au

Government of South Australia
SA Health

Introduction

- PPROM complicates only 2 % of pregnancies but is associated with 40 % of preterm deliveries and can result in significant neonatal morbidity and mortality
- The three causes of neonatal death associated with PPROM are:
    - Prematurity
    - Sepsis
    - Pulmonary hypoplasia
- Outcomes for preterm infants depend on place of birth and access to neonatal intensive care. Maternal transfer is generally safer than neonatal retrieval if delivery is not imminent

Definition

- Rupture of the fetal membranes before 37^{+0} completed weeks of pregnancy (i.e. preterm) and before the onset of labour (i.e. prelabour)

Associated risks of PPROM

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

Initial Assessment

- History and examination
- Abdominal palpation to determine fetal size and presentation
- Speculum examination to:
    - Exclude cord prolapse
    - Visualise pooling of liquor (note presence of vernix)
    - Collect cervical and vaginal microbiological swabs (including GBS)
    - Make a smear to look for ferning on microscopical examination
    - Estimate cervical dilatation
    - Amnicator (nitrazine yellow): a positive reaction results in a blue / purple colour on contact (false positive rate of 17 %)

Transfer or retrieval for access to specialised obstetric and neonatal services

- In units without neonatal facilities suitable for the gestation, consult with tertiary centre. Consider maternal transfer if delivery is not imminent or consult with neonatal retrieval service if delivery is anticipated

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Surveillance / Fetal assessment

- Cardiotocography (CTG) to assess fetal condition
- Ultrasound to assess liquor volume (and visualise presentation)
- Consider formal ultrasound for fetal number, weight, presentation, morphology and liquor volume

Laboratory investigations

- C-Reactive Protein – repeat daily for three days
- Complete blood picture – repeat daily for three days
- Low and high vaginal swabs for microscopy and culture
- Midstream specimen of urine for bacteriology

Antibiotic prophylaxis

- Studies show that prophylactic antibiotics prolong pregnancy and reduce maternal and neonatal sepsis (Kenyon et al. 2003)

If there is no evidence of chorioamnionitis

- Commence antibiotic prophylaxis:
    1. Benzylpenicillin 3 g IV loading dose, then 1.2 g IV every four hours for 48 hours or until delivery if this occurs earlier
        - If allergic to penicillin, give clindamycin 600 mg IV in 50 – 100 mL over at least 20 minutes every 8 hours, until delivery if this occurs earlier
    2. Oral erythromycin 250 mg 4 times a day for 10 days or until delivery if this occurs earlier
- Further benzylpenicillin prophylaxis, as above, is indicated whenever labour recurs

If there are signs of chorioamnionitis:

- The diagnosis of chorioamnionitis relies on the clinical presentation and may be difficult in its early manifestations
- The clinical picture may include ***maternal fever*** with two or more of the following:
    - Increased white cell count (> 15 x 109 / L)
    - Maternal tachycardia (> 100 bpm)
    - Fetal tachycardia (>160 bpm)
    - Uterine tenderness
    - Offensive smelling vaginal discharge
    - C-Reactive Protein > 40
- Consideration should also be given to check for any other site of infection (e.g. urinary or respiratory tract) which could cause these changes
- If in doubt consultation with a senior obstetrician, maternal fetal medicine or infectious disease physician should be considered
- Histological examination of placenta and membranes with evidence of acute inflammation may confirm the diagnosis after birth

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

If signs of chorioamnionitis

- Ampicillin (or amoxycillin) 2 g IV every 6 hours
- Gentamicin 5 mg / kg IV daily
- Metronidazole 500 mg IV every 12 hours
- If allergic to penicillin, give clindamycin 600 mg IV in 50 – 100 mL over at least 20 minutes every 8 hours AND gentamicin 5 mg / kg IV daily until delivery
- For information about gentamicin levels, see 'Peripartum prophylactic antibiotics' in the A to Z index at www.sahealth.sa.gov.au/perinatal
- Do not inhibit labour, but consider hastening delivery under intravenous antibiotic cover
- Consider optimal mode of delivery (LSCS versus vaginal birth) on the basis of the findings and the anticipated duration until birth

Postnatal maternal antibiotics

- If chorioamnionitis, consider treatment with continued:
    - Ampicillin (or amoxycillin) 2g IV every 6 hours for 5 days
    - Gentamicin IV 5 mg / kg as a single daily dose for 5 days
    - Metronidazole 500 mg IV every 12 hours for 5 days
- May change to oral antibiotics once the woman is afebrile and tolerating oral medication e.g. amoxycillin 500 mg every 8 hours and metronidazole 400 mg every 12 hours or amoxycillin / clavulanic acid (Augmentin Duo Forte x 1 every 12 hours) for the rest of the 5 days
- If allergic to penicillin, give metronidazole 400 mg orally every 12 hours for the rest of the 5 days AND azithromycin 1 g orally as a single dose, repeated after 7 days

Tocolytics

- Where contractions are present, nifedipine may be commenced (for further information see 'nifedipine for preterm labour' in the A to Z index at www.sahealth.sa.gov.au/perinatal) to prolong pregnancy for 48 hours while corticosteroid cover is established if there are no other signs of chorioamnionitis
    - Give stat oral dose nifedipine 20 mg
    - Give second oral dose nifedipine 20 mg 30 minutes after first dose (maximum is 40 mg in the first hour)
    - Do not give any further nifedipine until 3 hours after the 2nd dose
    - Administer oral nifedipine 20 mg every 3 hours until contractions cease or the woman establishes in labour. Prescribe as written (do not prescribe as prn)
    - After 24 hours, medical review is required to determine the dose of maintenance treatment with controlled release nifedipine (Adalat® Oros) 2-3 times per day
- For further information see 'nifedipine for preterm labour' in the A to Z index at www.sahealth.sa.gov.au/perinatal

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Corticosteroids[22,23]	
> Corticosteroids are effective in preventing adverse perinatal outcomes, most notably respiratory distress syndrome, and in increasing the likelihood of neonatal survival[22] > Repeated doses of corticosteroids reduce the occurrence and severity of neonatal lung disease and the risk of serious health problems in the first few weeks of life[22]	
Single course	**Indications** > Gestational age is between 23^{+0} and 34^{+6} weeks and in PTL > Risk of preterm imminent birth > Preterm birth is planned or expected within the next seven days **Dosage** > Administer IM betamethasone in two doses of 11.4 mg (5.7 mg x 2) 24 hours apart to the woman > If betamethasone is unavailable, give IM dexamethasone in two doses of 12 mg, 24 hours apart[22]
	> Where appropriate, estimate the risk of preterm birth by considering the use of adjunct prediction tests including fetal fibronectin and assessment of cervical length
Repeat course(s)	**Indications** > When the gestational age is **32^{+6} days or less**, a repeat antenatal corticosteroid dose may be given 7 days or more after the first course in women still considered at risk of early preterm birth **Dosage** > **Either:** A single repeat dose of IM betamethasone 11.4 mg IM (5.7 mg x 2) > **OR** A single repeat course of IM betamethasone in two doses of 11.4 mg (5.7 mg x 2) 24 hours apart > If betamethasone is unavailable, give IM dexamethasone 12 mg
Further repeat single dose(s)	> Seven days after the first, single, repeat dose (and less than 14 days since the first repeat dose), if the woman is still considered to be at risk of preterm birth within the next seven days, a further, single, repeat dose of antenatal corticosteroids (IM betamethasone 11.4 mg IM [5.7 mg x 2]) can be given > Use up to a maximum of three, single, repeat doses only > **NB:** Do not give any further repeat courses if a single repeat course (11.4 mg, as two intramuscular doses, 24 hours apart) of betamethasone has been given already

Magnesium sulphate for neuroprotection of the fetus

Controlled trials

> Show that fetal exposure to magnesium sulphate given before preterm birth has a neuroprotective role. The number of women needed to be treated to benefit one baby by avoiding cerebral palsy is 63 (Doyle et al. 2009)

> This systematic review also showed a significant reduction in the rate of gross motor dysfunction in early childhood (Doyle et al. 2009)

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Indications

- Neuroprotection of the fetus for women at risk of preterm birth who are at least 24^{+0} weeks of gestation and < 30^{+0} weeks of gestation
- When birth is anticipated within 24 hours or in cases of expected planned delivery as close to four hours before expected delivery time and regardless of;
    - plurality
    - why the woman is at risk of preterm birth
    - parity
    - anticipated mode of birth
    - whether antenatal corticosteroids have been given or not

Dosage and administration

- See Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus in the A to Z index at www.sahealth.sa.gov.au/perinatal

Counselling

- The woman and her partner should be counselled by a member of the management team, which includes: obstetrician, neonatologist, midwife, and others as appropriate

Management

PPROM < 23 weeks gestation

- Outcomes for extremely preterm infants depend on place of birth and access to neonatal intensive care
- It is important to consult with neonatologists for up to date data to inform clinical decision making
- Parental attitudes must be taken into account in formulating a management plan
- Continue antibiotic prophylaxis (as above)

Active management (i.e. allow / encourage birth to proceed) when

- In established labour
- Signs of chorioamnionitis are present
- Significant antepartum haemorrhage is present
- The woman requests it

Expectant management

- Is acceptable when the risk of amnionitis and pulmonary hypoplasia is less than the risk of extreme preterm birth and neonatal death
- If delivery does not occur, further benzylpenicillin prophylaxis is indicated when labour recurs
- Repeat high vaginal swab at weekly intervals; results may guide use of antibiotics in any subsequent labour
- Complete blood picture and C-Reactive Protein twice weekly

PPROM 23-34 weeks gestation

- Continue antibiotic prophylaxis (as above)
- Expectant management until 34 weeks of gestation if GBS positive

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Active management (i.e. allow / encourage birth to proceed) when

- In established labour
- Signs of chorioamnionitis are present
- Significant antepartum haemorrhage is present
- Signs of fetal compromise
    - Consider caesarean section if birth is not imminent

Expectant management may be appropriate in the absence of the above. This management should include:

- Daily medical clinical assessment of the woman
- Clinical observations twice daily
    - Temperature, maternal pulse, fetal heart rate
    - PV loss
    - Assessment of uterine activity (abdominal pain or tenderness)
- Involving a neonatologist
- If delivery does not occur, further benzylpenicillin prophylaxis is indicated when labour recurs
- Facilitating education including:
    - Neonatology review
    - Neonatal intensive care tour
    - Appropriate preterm birth DVD / video

Surveillance / fetal assessment

- CTG daily for the first 3-6 days, then twice per week if low risk inpatient or at home
- CTG should be reconsidered where regular fetal surveillance is required (RCOG 2006)
- Recommence CTG in the presence of:
    - Regular abdominal pains or tenderness
    - change in amount, colour of liquor
    - Antepartum haemorrhage

Investigations

- Complete blood picture (CBP), C- reactive protein (CRP) daily for 3 days
- Consecutive daily CRP values > 20 mg / L or isolated values > 40 mg / L are suggestive of infection
- Twice weekly after initial assessment

Vaginal swabs

- Repeat high vaginal swab at weekly intervals; results may guide use of antibiotics in any subsequent labour

PPROM at 34-37 weeks gestation

- Continue antibiotic prophylaxis (see above)
- Studies are currently in progress to establish whether to recommend expectant or active management for women with PPROM between 34 to 36 completed weeks of gestation

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Active management (i.e. allow / encourage birth to proceed) when

> In established labour

> Signs of chorioamnionitis are present

> Significant antepartum haemorrhage is present

> If GBS positive, active management after 36 completed weeks of gestation

> Signs of fetal compromise

> Consider caesarean section if birth is not imminent

Expectant management consists of

> Await spontaneous onset of labour until 36 completed weeks of gestation

> Continue prophylactic antibiotic treatment

> Home care may be considered

Surveillance / fetal assessment

> CTG daily for the first 3-6 days, then twice per week if low risk inpatient or at home

> CTG should be reconsidered where regular fetal surveillance is required (RCOG 2006)

> Recommence CTG in the presence of:

> Regular abdominal pains or tenderness

> change in amount, colour of liquor

> Antepartum haemorrhage

Home care

> May be considered for all women after 72 hours of initial hospitalisation if:

> Singleton pregnancy

> Cephalic presentation > 23 weeks

> Easy access to the hospital

Continue

> Daily temperature

> Twice weekly follow up CTG and investigations as an outpatient

> Return to hospital if reduced fetal movements

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at:
HealthCYWHSPerinatalProtocol@sa.gov.au

References

1. Royal College of Obstetricians and Gynaecologists (RCOG). Preterm prelabour rupture of membranes. RCOG guideline No. 44, October 2010. Available from URL: https://www.rcog.org.uk/
2. Kenyon S, Boulvain M, Neilson JP. Antibiotics for preterm rupture of membranes. *Cochrane Database of Systematic Reviews 2013*, Issue 12. Art. No.: CD001058. DOI: 10.1002/14651858.CD001058.pub3. (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD001058/pdf_fs.html
3. Roberts D, Dalziel S. Antenatal corticosteroids for accelerating fetal lung maturation for women at risk of preterm birth. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD004454. DOI: 10.1002/14651858.CD004454.pub2 (Level I). Available form URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004454/pdf_fs.html
4. Crowther CA, McKinlay CJD, Middleton P, Harding JE. Repeat doses of prenatal corticosteroids for women at risk of preterm birth for improving neonatal health outcomes. Cochrane Database of Systematic Reviews 2011, Issue 6. Art. No.: CD003935. DOI: 10.1002/14651858.CD003935.pub3. (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD003935/pdf_fs.html
5. Antenatal Corticosteroid Clinical Practice Guidelines Panel. Antenatal corticosteroids given to women prior to birth to improve fetal, infant, child and adult health: Clinical Practice Guideines. 2015. Liggins Institute, The University of Auckland, Auckland. New Zealand. Available from URL: www.ligginstrials.org/ANC_CPG
6. Doyle LW, Crowther CA, Middleton P, Marret S, Rouse D. Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus. *Cochrane Database of Systematic Reviews* 2009, Issue 1. Art. No.: CD004661. DOI: 10.1002/14651858.CD004661.pub3 (Level I). Available from URL: http://www.mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004661/pdf_fs.html
7. The Antenatal Magnesium Sulphate for Neuroprotection Guideline Development Panel. Antenatal magnesium sulphate prior to preterm birth for neuroprotection of the fetus, infant and child: National clinical practice guidelines. Adelaide: The University of Adelaide, 2010. ISBN Print: 978-0-86396-720-7. Available from URL: http://www.adelaide.edu.au/arch/
8. MIMS Online. MIMS Pharmaceutical Product Information. [online database] Full product information Adalat® tablets data version August 2010 [cited 2010 Aug 16]. Available: MIMS Online. (Level I).
9. Enkin M, Keirse MJNC, Neilson J, Crowther C, Duley L, Hodnett E, Hofmeyr J. A guide to effective care in pregnancy and childbirth. 3rd ed. Oxford: Oxford University Press; 2000 (Level I).
10. Ryan G, Oskamp M, Seaward PGR, Kitch T, Barrett T, Brennan B, Salenieks ME, O'Brien K. Randomized controlled trial of inpatient vs. outpatient management of PPROM. Am J Obstet Gynecol 1999; 180: S95 (Level II).
11. Segal S, Miles A, Clothier B, Parry S, Macones G. Optimal duration of antibiotic therapy after PPROM [abstract]. Am J Obstet Gynecol 2002; 187: S72 (Level II).

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at: HealthCYWHSPerinatalProtocol@sa.gov.au

Abbreviations

bpm	Beats per minute
CBP	Complete blood picture
C	Celsius
CRP	C- reactive protein
CTG	Cardiotocography
et al.	And others
g	Gram(s)
>	Greater than
GBS	Group B Streptococcus
IM	Intramuscular
IV	Intravenous
kg	Kilogram/s
<	Less than
mL	Millilitre/s
mg	Milligram/s
PPROM	Preterm prelabour of the membranes
i.e.	That is

Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	10 May 2004	26 Feb 2007	Original version
2.0	26 Feb 2007	19 Mar 2007	Reviewed
3.0	19 Mar 2007	20 Sep 2007	Reviewed
4.0	20 Sep 2007	30 Dec 2008	Reviewed
5.0	30 Dec 2008	25 May 2010	Reviewed
6.0	25 May 2010	18 Oct 2010	Reviewed
7.0	18 Oct 2010	22 May 2012	Reviewed
8.0	22 May 2012	20 May 2014	Reviewed
9.0	20 May 2014	07 Sept 2015	Reviewed
10.0	07 Sept 2015	Current	

ISBN number: 978-1-74243-748-4
Endorsed by: South Australian Maternal & Neonatal Clinical Network
Last Revised: 07/09/15
Contact: South Australian Perinatal Practice Guidelines Workgroup at:
HealthCYWHSPerinatalProtocol@sa.gov.au

Government of South Australia
SA Health