Queensland Clinical Guideline: Preterm labour and birth

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The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- Providing care within the context of locally available resources, expertise, and scope of practice
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

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Flow Chart: Assessment and management of preterm labour (< 37 weeks)

**Review History**
- Medical, surgical, obstetric, social

**Assess for signs and symptoms**
- Pelvic pressure
- Lower abdominal pain
- Lower back pain
- Vaginal loss – mucus, blood, fluid
- Regular uterine activity

**Physical examination**
- Vital signs
- Abdominal palpation
- Fetal surveillance – FHR, CTG

**Sterile speculum exam**
- Identify if ROM
- Visualise cervix/membranes
- High vaginal swab
- Test for IFN
- Low vaginal/anorectal GBS swab
- Cervical dilatation
- Sterile digital vaginal exam
- Ultrasound – if available
- Fetal growth and wellbeing

**Laboratory**
- High vaginal swabs for MC&S
- One swab (low vaginal + anal) for GBS
- Midstream urine for MC&S

**Consider admission if:**
- IFN > 50 ng/mL or
- Cervical dilatation or
- Cervical change over 2–4 hours or
- ROM or
- Contractions regular & painful or
- Further observation or investigation indicated or
- Other maternal or fetal concerns

**Admission indicated?**
- No
- Yes

**Admit**
- Analgesia if required
- Clinical surveillance
- Fetal monitoring/continuous CTG
- TVCL if available
- Consult as required
- Plan care

**Discharge**
- Provide information re: signs and symptoms and returning for care
- Arrange follow-up as indicated

**In-utero transfer**
- Aim for in-utero transfer wherever possible
- If gestation 23–28 weeks, accept a high level of risk for birth en-route (unless it puts mother’s life at risk)
- Coordinate transfer via RSQ phone: 1300 799 127

**Antenatal corticosteroids (< 35+0 weeks)**
- Recommend course of Betamethasone (2 doses)
  - 11.4 mg IM then 2nd dose in 24 hours
  - Consider 2nd dose at 12 hours if PTB likely within 24 hours
  - If risk of PTB remains ongoing in 7 days, repeat dose

**Tocolysis**
- Nifedipine 20 mg oral
  - If contractions persist after 30 minutes repeat Nifedipine 20 mg oral
  - If contractions persist after further 30 minutes repeat Nifedipine 20 mg oral
  - Maintenance therapy 20 mg every 6 hours for 48 hours

**Discuss with Obstetrician/Paediatrician**
- If contraindications exist
- If other options required (Indomethacin, Salbutamol)

**Antibiotics:**
- If established labour (or imminent risk of PTB) give intrapartum GBS prophylaxis regardless of GBS status or membrane status
- If chorioamnionitis (membranes intact or ruptured)
  - Ampicillin (or Amoxycillin) 2 g IV initial dose, then 1 g IV every 6 hours
  - Gentamicin 5 mg/kg IV daily
  - Metronidazole 500 mg IV every 12 hours
- If Penicillin hypersensitivity and chorioamnionitis:
  - Lincomycin OR Clindamycin 600 mg IV every 8 hours
  - Gentamicin 5 mg/kg IV daily
  - Metronidazole 500 mg IV every 12 hours
- If labour does not ensue (and no evidence of chorioamnionitis) and membranes intact then cease antibiotics
- If PPROM, refer to Queensland Clinical Guideline: EOGBSD for regimen

**Magnesium Sulfate**
- Gestational age 24–30 weeks
- Labour established or birth imminent
  - Loading dose: 4 g IV bolus over 20 minutes
  - Maintenance dose: 1 g/hour for 24 hours or until birth – whichever occurs first

**Prepare for birth**
- Recommend vaginal birth unless there are specific contraindications to vaginal birth or maternal conditions necessitating caesarean section

**Management after threatened preterm labour**
- Plan care according to clinical circumstances
  - Maternal and fetal assessments
  - Transfer back to referring hospital where feasible
  - Discharge if usual criteria met
  - Inform the woman, GP and usual care provider about recommendations for future care

Queensland Clinical Guidelines: Preterm labour and birth: F14.6-1-V8-R19


Refer to online version, destroy printed copies after use
Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP</td>
<td>Blood pressure</td>
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<tr>
<td>BV</td>
<td>Bacterial vaginosis</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence interval</td>
</tr>
<tr>
<td>CSCF</td>
<td>Clinical Services Capability Framework</td>
</tr>
<tr>
<td>CTG</td>
<td>Cardiotocograph</td>
</tr>
<tr>
<td>GBS</td>
<td>Group B streptococcus</td>
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<tr>
<td>fFN</td>
<td>Fetal fibronectin</td>
</tr>
<tr>
<td>FHR</td>
<td>Fetal heart rate</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>MC&amp;S</td>
<td>Microscopy, culture and sensitivity</td>
</tr>
<tr>
<td>PROM</td>
<td>Prelabour rupture of membranes</td>
</tr>
<tr>
<td>PPROM</td>
<td>Preterm prelabour rupture of membranes</td>
</tr>
<tr>
<td>PTB</td>
<td>Preterm birth</td>
</tr>
<tr>
<td>RSQ</td>
<td>Retrieval Services Queensland</td>
</tr>
<tr>
<td>TVCL</td>
<td>Transvaginal cervical length</td>
</tr>
<tr>
<td>RR</td>
<td>Relative risk</td>
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</tbody>
</table>

Definitions of terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fetal fibronectin</td>
<td>In this guideline the quantitative Fetal Fibronectin (fFN) test is preferred because of its ability to provide a quantifiable test result that better informs management over and above other tests that only provide a ‘positive’ or ‘negative’ result (e.g. non-quantitative fFN/Quickcheck, or Actim Partus).</td>
</tr>
<tr>
<td>Health care team</td>
<td>The health care team includes members from a range of health disciplines as relevant to the circumstances. This may include but is not limited to: obstetrics, midwifery, anaesthetics, neonatology/paediatrics General Practice, maternal-fetal medicine, social work, pharmacy, dietetics.</td>
</tr>
<tr>
<td>Imminent risk of PTB</td>
<td>Substantial risk of birth within 24 hours as clinically determined by the woman’s health care provider.</td>
</tr>
<tr>
<td>Informed choice</td>
<td>When a woman has the autonomy and control to make decisions about her care after a process of information exchange that involves providing her with sufficient, evidence-based information about all options for her care, in the absence of coercion by any party and without withholding information about any options.</td>
</tr>
<tr>
<td>Informed consent</td>
<td>When a woman consents to a recommendation about her care after a process of information exchange that involves providing her with sufficient, evidence-based information about all the options for her care so that she can make a decision, in the absence of coercion by any party, that reflects self-determination, autonomy and control.</td>
</tr>
<tr>
<td>Obstetrician</td>
<td>Local facilities may as required, differentiate the roles and responsibilities assigned in this document to an ‘Obstetrician’ according to their specific practitioner group requirements; for example to General Practitioner Obstetricians, Specialist Obstetricians, Consultants, Senior Registrars and Obstetric Fellows.</td>
</tr>
</tbody>
</table>
| Preterm2              | Gestational age less than 37+0 completed weeks. Subcategories include:  
  • Extremely preterm: less than 28 weeks gestational age  
  • Very preterm: 28 to less than 32 weeks gestational age  
  • Moderate to late preterm: 32 to less than 37 weeks gestational age |
| Short cervix          | In this document, short cervix is defined as less than 25 mm. |
| Woman centred care    | Woman centred care includes the affordance of respect and dignity by supporting the woman to be central and active in her own care through:  
  • Holistic care taking account of the woman’s physical, psychosocial, cultural, emotional and spiritual needs  
  • Focussing on the woman’s expectations, aspirations and needs, rather than the institutional or professional needs  
  • Recognising the woman’s right to self-determination through choice, control and continuity of care from a known or known caregivers  
  • Recognising the needs of the baby, the woman’s family and significant others. |
1 Introduction

Preterm is commonly defined as gestational age less than 37+0 completed weeks with subcategories of preterm birth based on weeks of gestational age\(^2\) [refer to Definition of terms]. Preterm labour is a multifactorial condition associated with a high risk of neonatal morbidity and mortality, especially at lower gestational ages. The incidence of preterm birth (PTB) continues to rise world-wide.\(^2\) In Australia in 2011, 7.5% of babies were born preterm (less than 37 weeks).\(^5\) In Queensland in 2011, PTB accounted for:

- 7% of singleton births
- 60% of multiple births
- Almost 13% of the births to Aboriginal and/or Torres Strait Islander women
- 82% of the 610 perinatal deaths

1.1 Communication

Share and discuss information with the woman in a manner that enables informed choice and consent and supports woman centred care [refer to Definition of terms].

- Discuss the woman’s preferences for management
- Establish welcoming methods of communication between women with prior PTB and knowledgeable caregivers\(^7\)
- Assess personal and family resources and barriers to receiving care\(^7\)
- A multidisciplinary health care approach to care is essential
- Involve and communicate with members of the health care team in a timely manner

1.2 Clinical standards

- Provide care in accordance with the Clinical Service Capability Framework (CSCF)\(^8\)
- Undertake clinical observations in accordance with the National Consensus Framework\(^9\)
  - Consider use of maternity early warning tools to monitor for clinical deterioration
- Ensure necessary resources (human and equipment) are available to provide the level of care required (e.g. cardiotocograph (CTG), one to one midwifery care when indicated)
- Develop locally agreed protocols to support management including:
  - Consultation mechanisms or processes with higher service capabilities
  - Referral for ultrasound scan, CTG and other assessments where access to expertise or equipment is limited
  - In areas where access to professional ultrasound scanning is limited, support visiting specialists and GP Obstetricians to undertake training in basic obstetric scanning
- Where gestational age is less than 26+0 weeks, refer to the Queensland Clinical Guideline *Perinatal care at the threshold of viability*\(^10\)
## 2  Risk assessment

The cause of spontaneous preterm labour remains unidentified in up to half of all cases\(^{11}\) and although many factors have been associated with an increased risk of spontaneous PTB\(^2\), there is a relative paucity of high level research.\(^2,12,13\) The majority of women with traditional risk factors will not experience PTB and of those women who do, many have no identifiable risk factors. Whether or not some risk factors are markers for other conditions and/or other risk factors is unknown.

Table 1. Risk factors associated with preterm birth

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Risk factors associated with preterm birth (PTB)</th>
</tr>
</thead>
</table>
| **Maternal characteristics**   | • Age of mother\(^{14}\)  
  o Younger than 18 years  
  o Older than 35 years  
  • Ethnicity compared to Caucasians\(^{15}\)  
  o African: increased by 60%\(^{14}\)  
  o South Asian: increased by 40%\(^{14}\)  
  o Indigenous: increased by 70%\(^6\)  
  • Cigarette smoking: increased by 30%\(^{14}\)  
  • High levels of psychological stress\(^{15}\)  
  • Late or no health care in pregnancy\(^{15}\)  
  • Low socio-economic status\(^{15}\)  
  • High or low\(^{16}\) body mass index (BMI)\(^{17,18}\) |
| **Medical and pregnancy conditions** | • Presence of fetal fibronectin in the vaginal secretions\(^{19}\)  
  • Short cervical length\(^{11,20}\)  
  • Previous PTB\(^{14}\) recurrence risk related to:  
    o Gestational age of prior PTB\(^{11}\)  
      ▪ Approximately 30% of women who give birth between 20 and 31 weeks in a prior pregnancy will give birth before 37 weeks in a subsequent pregnancy and 10% of these will occur at a similar gestational age\(^{21}\)  
    o Number of prior PTB\(^{11,14}\)  
      ▪ 15% recurrence risk with single prior PTB, 32% recurrence risk with two prior PTB\(^{21}\)  
  • Genital tract infections  
    o Bacterial vaginosis\(^{20}\) risk of PTB doubled\(^{22}\)  
  • Urinary tract infections\(^{23}\)  
  • Vaginal bleeding\(^{20}\)  
  • Assisted reproduction associated with 2 fold increased risk of PTB\(^7\)  
  • Preterm prelabour rupture of membranes (PPROM)\(^{18}\)  
  • Surgical procedures involving the cervix\(^{24}\)  
  • Uterine anomalies  
  • Polyhydramnios/oligohydramnios  
  • Multiple gestation—60% of twins born preterm\(^{15}\)  
  • Chronic medical conditions  
  • Acute medical conditions (e.g. preeclampsia, antepartum haemorrhage) |
## 3 Risk reduction measures

### Table 2. Risk reduction measures

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| **Counselling**               | • Assess risk factors preconception  
• Perform a comprehensive review of all previous pregnancies because the most important historical risk factor is prior spontaneous PTB\(^7,25\)  
• Counsel women about modifiable risk factors\(^12\)  
  o Smoking cessation interventions reduce PTB rate by 18% (RR 0.82, 95% CI 0.70–0.96)\(^12,26\)  
  o Optimisation of control of underlying chronic diseases reduces risk\(^13\)  
  o Lifestyle (e.g. balanced diet, activity limitations, stress management)  
• Preform a psychosocial assessment and refer as appropriate to mental health services |
| **Bacterial vaginosis (BV)**  | • Bacterial vaginosis (BV) has been associated with increased risk of PTB\(^27\)  
• Routine screening and treatment for asymptomatic BV not found to prevent PTB\(^22,27\)  
• Offer screening and treatment to women with previous PTB\(^27\) as there may be benefit\(^28\)  
• In women with abnormal vaginal flora, treatment with antibiotics may reduce the risk of PTB\(^22,29\)  
• Refer to Section 5.5 Antibiotics for management of Group B Streptococcal disease (GBS) in preterm labour |
| **Bacteriuria**               | • Asymptomatic bacteriuria has been associated with risk of PTB\(^23\)  
• Urinary tract infection is associated with threatened preterm labour  
• Screen for and recommend treatment for urinary tract infections (asymptomatic bacteriuria, cystitis, pyelonephritis) with antibiotics\(^23\) |
| **Cervical length measurement** | • Recommend serial transvaginal cervical length (TVCL) measurement for women with prior PTB  
  o The optimal frequency has not been established  
  o From 14–24 weeks gestation, serial TVCL every 2 weeks may be appropriate\(^30,31\)  
• Routine TVCL measurement as a screening tool for PTB in low risk women is not currently recommended |
3.1 Progesterone therapy

Table 3. Progesterone therapy

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| **Context**       | • Progesterone therapy for women with a history of spontaneous PTB, reported to reduce the risk of PTB before 34 weeks (RR 0.31, 95% CI 0.14–0.69) and before 37 weeks (RR 0.55, 95% CI 0.42–0.74)\(^{21}\)  
• Progesterone therapy reported to reduce the risk of PTB before 28 weeks (RR 0.59, 95% CI 0.37–0.93)\(^{21}\) and 34 weeks (RR 0.64, 95% CI 0.45–0.90)\(^{21}\) in women with short cervical length\(^{32,33}\)  
• Further studies with more relevant populations are awaiting full publication and may influence future recommendations\(^{34,35}\)  
• There is limited evidence about the optimal Progesterone regimen and about longer term health effects \(^{21,36}\)   
• One meta-analysis\(^{36}\) showed no difference in effect between 90 mg, 100 mg and 200 mg Progesterone pessaries for women with a short cervix |
| **Recommendation**| • Consider Progesterone therapy from 16–24 weeks gestation\(^{12,21,36,37}\) for women with a singleton gestation and a prior spontaneous PTB  
• Consider Progesterone therapy for asymptomatic women with an incidentally diagnosed short cervix on TVCL assessment in the second trimester\(^{37}\)  
• No intervention has yet been shown to improve outcomes for women with a short cervix and a multiple gestation\(^{38}\)  
• If indicated, recommend vaginal Progesterone suppository 200 mg daily until 34 weeks gestation, rupture of membranes or birth, whichever occurs first |

*Refer to an Australian pharmacopoeia for complete drug information

3.2 Cervical cerclage

Table 4. Cervical cerclage

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
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</table>
| **Context**  | • Compared with no treatment, cervical cerclage reduces the incidence of PTB in women at risk of recurrent PTB (RR 0.80, 95% CI 0.69 to 0.95)\(^{39}\)  
• Take into account individual clinical circumstances and the potentially serious risks associated with the procedure\(^{40}\)  
• If cervical cerclage is offered, counsel women about the risk of uterine contractions, bleeding, ruptured membranes or infection\(^{39}\) |
| **Recommendations** | • May be indicated (individualise decisions) for women with history of either:  
  o One or more prior spontaneous PTB and/or second-trimester loss related to painless cervical dilation and in the absence of labour or abruptio placentaet, or  
  o Prior cerclage due to painless cervical dilation in second trimester  
• May be indicated if TVCL less than 25 mm before 24 weeks if\(^{41}\):  
  o Prior spontaneous PTB before 34 weeks gestation and  
  o Current pregnancy singleton  
• There is limited data about the effectiveness of rescue cerclage particularly beyond 24 weeks of gestation therefore individualise decisions  
• Multiple dilation and evacuations or cervical surgery (e.g. cone biopsy, large loop excision of the transformation zone, laser ablation, diathermy) or other abnormalities (e.g. Mullerian anomaly) are not themselves an indication for cerclage  
• Not recommended for women with:  
  o Funnelling of the cervix in the absence of cervical shortening to 25 mm or less\(^{42}\)  
  o An incidentally identified short cervix without a history of spontaneous PTB or second trimester loss \(^{42}\)  
  o Multiple pregnancy (and may be detrimental\(^{42}\)) |
## 4 Clinical assessment of preterm labour

Table 5. Clinical assessment

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
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</table>
| **Review history**      | • Medical  
• Surgical  
• Obstetric  
• Psychosocial and lifestyle  
• Refer to Table 1. Risk factors associated with preterm birth |
| **Signs and symptoms**  | • The most common sequence preceding PTB is cervical ripening (shortening of the cervix), followed by decidual membrane activation and then contractions’ characterised by:  
  o Cervical effacement/dilatation  
  o Pelvic pressure  
  o Lower abdominal cramping  
  o Lower back pain  
  o Vaginal loss (mucous, blood or fluid)  
  o Regular uterine activity |
| **Physical examination**| • Vital signs  
• Abdominal palpation to assess uterine tone, contractions, fetal size and presentation  
• Sterile speculum examination to:  
  o Confirm/exclude rupture of membranes  
  o Visualise cervix/membranes  
  o Assess liquor (e.g. clear, meconium stained, bloody)  
  o Collect high vaginal swab for microscopy culture and sensitivity (MC&S)  
  o Perform test for the presence of fetal fibronectin (if not contraindicated) [refer to Section 4.2 Fetal fibronectin testing]  
• Collect combined low vaginal and anorectal swab for Group B streptococcus (GBS)  
  o Insert swab 2 cm into vagina and then insert same swab 1 cm into anus  
• Assess cervical dilatation by sterile digital vaginal examination unless contraindicated by:  
  o Ruptured membranes  
  o Suspected placenta praevia |
| **Fetal surveillance**  | • Fetal heart rate (FHR)  
• Continuous CTG  
  o Take into account gestational age (interpret with caution if less than 28 weeks gestation)  
• Ultrasound examination for fetal growth and wellbeing  
  o Fetal number, presentation, liquor volume and placenta localisation |
| **Laboratory investigations** | • High vaginal swabs for MC&S  
• Genital swab for GBS (low vaginal and anal)  
• Midstream specimen of urine for bacteriology (MC&S) |
4.1 Cervical length

Transvaginal ultrasound of cervical length (TVCL) can aid in assessing the risk of PTB.

- TVCL must be performed by a credentialed clinician
- Lack of local capability to perform TVCL is not a reason for transfer

Table 6. Cervical length assessment

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
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</thead>
</table>
| Context         | • Various cervical lengths usually before 24 weeks of gestation, have been used to define cohorts of women at high risk of PTB (TVCL less than 25 mm\(^7,36,38\), less than 20 mm\(^44\) or less than 15 mm\(^32,33\))
                  • Short cervical length is associated with an increased risk of PTB and the shorter the cervical length, the greater the risk\(^30,45\)
                  o Refer to Table 7. Cervical length and risk of preterm birth
                  • When performed by trained operators, transvaginal ultrasound is more reliable, reproducible and predictive for cervical length assessment compared to transabdominal ultrasound\(^38\) |
| Recommendation  | • Recommend TVCL measurement to women with identified or suspected preterm labour (where available)
                  • Consider therapeutic interventions when the TVCL is measured at less than 25 mm\(^38\) |

Table 7. Cervical length and risk of preterm birth

<table>
<thead>
<tr>
<th>Cervical length (mm)</th>
<th>&lt;28 weeks</th>
<th>28–30 weeks</th>
<th>31–33 weeks</th>
<th>34–36 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2</td>
<td>745.29</td>
<td>74.29</td>
<td>44.22</td>
<td>99.36</td>
</tr>
<tr>
<td>5</td>
<td>119.19</td>
<td>36.81</td>
<td>24.26</td>
<td>18.10</td>
</tr>
<tr>
<td>7</td>
<td>62.08</td>
<td>27.80</td>
<td>19.08</td>
<td>11.15</td>
</tr>
<tr>
<td>10</td>
<td>26.79</td>
<td>18.24</td>
<td>13.31</td>
<td>6.53</td>
</tr>
<tr>
<td>12</td>
<td>16.29</td>
<td>13.77</td>
<td>10.47</td>
<td>4.93</td>
</tr>
<tr>
<td>15</td>
<td>8.26</td>
<td>9.04</td>
<td>7.30</td>
<td>3.47</td>
</tr>
<tr>
<td>18</td>
<td>4.45</td>
<td>5.93</td>
<td>5.09</td>
<td>2.60</td>
</tr>
<tr>
<td>20</td>
<td>3.03</td>
<td>4.48</td>
<td>4.01</td>
<td>2.20</td>
</tr>
<tr>
<td>22</td>
<td>2.10</td>
<td>3.38</td>
<td>3.15</td>
<td>1.89</td>
</tr>
<tr>
<td>25</td>
<td>1.25</td>
<td>2.22</td>
<td>2.20</td>
<td>1.53</td>
</tr>
</tbody>
</table>

4.2 Fetal fibronectin testing

In this guideline the quantitative Fetal Fibronectin (fFN) test is preferred because of its ability to provide a quantifiable test result that better informs management over and above other tests that only provide a ‘positive’ or ‘negative’ result (e.g. non-quantitative fFN/Quickcheck or Actim Partus).

Table 8. Fetal fibronectin testing

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
</table>
| **Context** | | • Fetal fibronectin (fFN) is a glycoprotein thought to promote adhesion between the fetal chorion and maternal decidua. It is normally present in low concentrations in the cervicovaginal secretions between 18 and 34–36 weeks gestation, rising as term approaches \(^{19}\)  
• Elevated levels of fFN (typically greater than 50 ng/mL) in cervicovaginal secretions after 22 weeks gestation are associated with an increased risk of PTB \(^{46}\)  
• A negative fetal fibronectin (fFN) is associated with a 99.5% negative predictive value for PTB within 7 days and 99.2% in the next 14 days \(^{47,48}\)  
• Quantitative fetal fibronectin testing may improve assessment of overall risk \(^{47}\), reduce unnecessary transfer and ultimately reduce longer term costs |
| **Indications** | | • Symptomatic preterm labour between 22+0 and 36+0 weeks gestation and  
• Intact membranes and  
• Cervical dilatation less than or equal to 3 cm |
| **Contraindications** | | • Cervical dilatation more than 3 cm  
• Ruptured membranes  
• Cervical cerclage insitu  
• Presence of soaps, gels, lubricants or disinfectants |
| **Relative contraindications** | | • Visual evidence of moderate or gross bleeding  
• Within 24 hours of coitus  
• A negative fFN result of less than 10 ng/mL is still valid:  
  o If a woman reports having intercourse in the previous 24 hours  
  o In the presence of moderate or gross vaginal bleeding |
| **Procedure** | | • Performed during sterile speculum examination prior to any examination or manipulation of the cervix or vagina  
• Use only sterile water as a lubricant  
• Obtain the sample for testing from the posterior fornix of the vagina  
• As per test kit instructions |
| **Quantitative fFN testing** | | • Quantitative fFN testing can \(^{47}\):  
  o Quantify the likelihood of PTB  
  o Assist with risk assessment and planning  
  o Avoid unnecessary interventions  
  o Identify women for targeted interventions  
  o Provide reassurance to health care providers and the woman |
| **fFN < 50 ng/mL (negative)** | | • Low risk of birth within 7–14 days \(^{57}\)  
• False negative result may occur due to \(^{19}\):  
  o Use of lubricant with speculum examination  
  o Intravaginal disinfectants  
• Refer to Section 5 for management considerations |
| **fFN ≥ 50 ng/mL (positive)** | | • False positive may occur as a result of recent:  
  o Coitus  
  o Digital vaginal examination  
  o Transvaginal ultrasound  
  o Bleeding  
• Refer to Section 5 Management of preterm labour |
4.3 Assess need for admission

Use clinical judgement and appropriate consultation in assessing the need for admission. Consider the fFN result in the context of the overall clinical circumstances, the resources available and the service capability of the facility. If membranes are ruptured use alternate care pathways.

Table 9. Assessment of need for admission

<table>
<thead>
<tr>
<th>Care</th>
<th>Assessment (assumes intact membranes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission indicated</td>
<td>• Consider admission for reassessment and/or therapeutic interventions if any of the following:</td>
</tr>
<tr>
<td></td>
<td>o fFN test greater than or equal to 50 ng/mL</td>
</tr>
<tr>
<td></td>
<td>o Cervical dilation</td>
</tr>
<tr>
<td></td>
<td>o Cervical change over 2–4 hours</td>
</tr>
<tr>
<td></td>
<td>o Ruptured membranes</td>
</tr>
<tr>
<td></td>
<td>o Contractions regular and painful</td>
</tr>
<tr>
<td></td>
<td>o Further observation or investigation indicated</td>
</tr>
<tr>
<td></td>
<td>o Other maternal or fetal concerns</td>
</tr>
<tr>
<td></td>
<td>• Refer to Table 10. Planning care</td>
</tr>
<tr>
<td>Admission not indicated</td>
<td>• If fFN less than 50 ng/mL and admission not otherwise indicated, discharge home if:</td>
</tr>
<tr>
<td></td>
<td>o Maternal vital signs within normal parameters</td>
</tr>
<tr>
<td></td>
<td>o Normal FHR/CTG relevant to gestational age</td>
</tr>
<tr>
<td></td>
<td>o No signs of chorioamnionitis</td>
</tr>
<tr>
<td></td>
<td>o Contractions infrequent/irregular</td>
</tr>
<tr>
<td></td>
<td>o No/minimal cervical change</td>
</tr>
<tr>
<td></td>
<td>• Provide the woman with information that:</td>
</tr>
<tr>
<td></td>
<td>o Aids her recognition of the signs and symptoms of preterm labour</td>
</tr>
<tr>
<td></td>
<td>o Identifies risk reduction measures appropriate to the circumstances (e.g. fluids)</td>
</tr>
<tr>
<td></td>
<td>o Provides instruction about when to seek clinical advice</td>
</tr>
<tr>
<td></td>
<td>• Arrange follow-up:</td>
</tr>
<tr>
<td></td>
<td>o If fFN 0–9 ng/mL routine follow-up as per usual model of care</td>
</tr>
<tr>
<td></td>
<td>• Less than 2% birth within two weeks</td>
</tr>
<tr>
<td></td>
<td>• Less than 2% birth before 34 weeks</td>
</tr>
<tr>
<td></td>
<td>o If fFN 10–49 ng/mL return for medical review within 7 days</td>
</tr>
<tr>
<td></td>
<td>• Less than 2% birth within two weeks</td>
</tr>
<tr>
<td></td>
<td>• 5–15% birth before 34 weeks</td>
</tr>
</tbody>
</table>
5 Management of preterm labour

Tocolysis and steroids are the main strategies to manage preterm labour. Transfer to a centre with higher service capability may also be necessary. Management options will depend on:

- Resource (equipment and human) availability
- Acuity level of the facility
- Gestational age and individual clinical circumstances

If necessary, contact a service with higher level capability for further advice.

5.1 Planning care

Use clinical judgement and appropriate consultation in planning care.

Table 10. Planning care

<table>
<thead>
<tr>
<th>fFN ng/mL</th>
<th>Care considerations</th>
<th>% birthing within 2 wks</th>
<th>% before 34 wks</th>
</tr>
</thead>
<tbody>
<tr>
<td>All women requiring admission</td>
<td>Admit for observation</td>
<td>5–15</td>
<td>10–15</td>
</tr>
<tr>
<td></td>
<td>Consider in-utero transfer (as relevant to service capability)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Offer analgesia</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Administer corticosteroids if less than 35+0 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure TVCL if resources available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communicate with multidisciplinary team as relevant to the circumstances (e.g. neonatology consultation, social worker referral, anaesthetic involvement)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Discuss plan for ongoing care with the woman in a manner that supports informed choice</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Document plan of care in the health record</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clinical reassessment as required</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If labour is established or birth appears imminent, and gestational age is less than 30 weeks, commence Magnesium Sulfate for neuroprotection of the fetus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to Appendix A: Magnesium Sulfate for fetal neuroprotection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50–199</td>
<td>As for all women requiring admission and Consider tocolysis if delay of birth indicated and no contraindications</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Take into account all clinical circumstances including history of PTB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>200–499</td>
<td>As for all women requiring admission and Commence tocolysis if delay of birth indicated and no contraindications</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>As for all women requiring admission and Commence tocolysis if delay of birth indicated and no contraindications</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Prepare for administration of Magnesium Sulfate (if gestational age less than or equal to 30 weeks)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5.2 In-utero transfer

#### Table 11. In-utero transfer

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td></td>
</tr>
</tbody>
</table>
| | • Neonatal outcomes are improved if PTB occurs in centres that manage high volumes of preterm newborns⁵  
| | • If transfer required, contact Retrieval Services Queensland to coordinate transfer ph:1300 799 127  
| **Principles for transfer at 23–28 weeks gestational age** |  
| | • Accept a high level of risk of birth occurring en-route when gestational age is 23–28 weeks because the benefit is so substantial  
| | • If birth is considered a possibility en-route:  
| | o Clinical assessment of the woman is performed by the transferring Consultant (or equivalent e.g. most Senior Medical Officer)  
| | o Transfer discussions and decisions occur between senior clinicians  
| | o Use RSQ conference calls to facilitate involvement of all relevant clinicians in the most time efficient manner  
| | o Discuss with RSQ medical coordinator the tasking of a second aeromedical clinician to accompany the flight nurse  
| | • Transfer decisions involve both obstetric and neonatal clinicians, particularly at the receiving site and the RSQ medical coordinator from an aeromedical asset allocation perspective  
| | • Accountability and responsibility for transfer decisions and their outcomes reside with the transferring and receiving consultants  
| | o Accountability and responsibility for transfer decisions and outcomes does not reside with the flight nurse  
| | • Recognise that retrieval platforms may not be immediately available (e.g. due to pilot and crew hours, weather or aircraft service needs)  
| | • Decisions about transfer may be escalated within RSQ by receiving or transferring clinicians or by the flight nurse as required  
| | • Reassess the woman after initial stabilisation to review timelines around transfer decisions, particularly if there are delays in transfer or transfer is not immediately feasible  
| | • Intubation and/or full resuscitation is not generally feasible within the aircraft environment. Neonatal resuscitation measures (should birth occur en-route) may include (but are not necessarily limited to) keeping baby warm, administering oxygen, providing CPAP via bag and mask  
| | • The transferring consultant (or equivalent) is responsible for ensuring that the risks and benefits of in-utero transfer are discussed with the woman/partner/family including the limited resuscitation that will be provided should birth occur en-route  
| | • The transferring consultant (or equivalent) is responsible for ensuring that there is comprehensive documentation in the health record and transfer documents regarding:  
| | o Discussions with the woman/family about the transfer including limited resuscitation if birth occurs en-route  
| | o Clinical assessment of the woman and the assessed risk of PTB  
| | o Discussions between receiving and transferring clinicians about the planned transfer  
| | • Should birth occur en-route, contact RSQ to task a neonatal retrieval team to meet the aircraft  
| | • RSQ will coordinate a combined services audit of births of 23–28 weeks gestational age occurring outside a level 6 neonatal unit  
| **Recommendation** |  
| | • When transfer is indicated, aim for in-utero transfer wherever possible  
| | o If gestational age is 23–28 weeks, accept a high level of risk for birth en-route unless such transfer puts the mother’s life at risk  
| | • If clinically appropriate, use tocolysis to allow in-utero transfer |
### 5.3 Antenatal corticosteroids

Table 12. Antenatal corticosteroids

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>• Antenatal corticosteroids are associated with a significant reduction in rates of neonatal death, respiratory distress syndrome and intraventricular haemorrhage (IVH)⁴⁹,⁵⁰  &lt;br&gt;• Antenatal corticosteroid use is also associated with a reduction in necrotising enterocolitis, respiratory support, intensive care admissions and systemic infections in the first 48 hours of life compared with no treatment or treatment with placebo⁴⁹,⁵⁰  &lt;br&gt;• Beneficial effect demonstrated regardless of membrane status⁴⁹  &lt;br&gt;• There is no evidence of long term harm or benefit (in early childhood) from multiple courses of antenatal corticosteroids⁵¹,⁵²  &lt;br&gt;• If the risk of PTB persists seven or more days after initial course, repeat dose(s) are associated with:⁵²  &lt;br&gt;  o Less respiratory distress and fewer serious health problems in the first few weeks after birth  &lt;br&gt;  o Small reduction in size at birth</td>
</tr>
<tr>
<td><strong>Recommendation</strong></td>
<td>• Routinely recommend corticosteroids to women with a viable fetus who are at increased risk of PTB⁵⁰ before 35+0 weeks gestational age⁵⁰  &lt;br&gt;• Determine the need for further weekly repeat dose(s) based on clinical assessment of the ongoing risk of PTB  &lt;br&gt;  o If the risk of PTB persists seven or more days after initial course, recommend a repeat dose of corticosteroids⁵²  &lt;br&gt;  o Seek expert obstetric/neonatal advice if uncertainty exists about continued risk of PTB  &lt;br&gt;  o If there is maternal diabetes, monitor blood glucose levels</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>• Initial course of antenatal corticosteroids (2 doses, 24 hours apart)  &lt;br&gt;  o 1st: dose: Betamethasone 11.4 mg IM  &lt;br&gt;  o 2nd: dose: Betamethasone 11.4 mg IM, 24 hours after 1st dose (if PTB likely within 24 hours, consider repeat dose at 12 hours)  &lt;br&gt;• Repeat dose of antenatal corticosteroids (single dose)  &lt;br&gt;  o Betamethasone 11.4 mg IM</td>
</tr>
</tbody>
</table>

*Refer to an Australian pharmacopoeia for complete drug information*
## 5.4 Tocolysis

### Table 13. Tocolysis

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
</table>
| **Context** | - Tocolytic drugs may delay birth and allow:  
  o Administration of corticosteroids  
  o Administration of Magnesium Sulfate for neuroprotection  
  o In-utero transfer to an appropriate level facility  
- Tocolysis not associated with a clear reduction in perinatal mortality or serious neonatal morbidity⁵³  
- No evidence to support the use of prophylactic tocolytic therapy after contractions have ceased⁵⁴  
- Recommend when a 48 hour delay in birth will benefit the newborn |
| **PPROM**   | - There is limited evidence about the use of tocolytics in the setting of PPROM⁵⁵  
  - Gestational age is a major determinant for management  
  - Tocolysis in women with PPROM before 34 weeks associated with⁵⁵:  
    o A lower risk of birth within 48 hours  
    o An increased risk of chorioamnionitis without significant maternal or neonatal benefit  
  - Tocolysis before viability not generally recommended⁵⁶ |
| **Contraindications** | - Maternal contraindications to tocolysis (agent specific)  
  - Any condition where prolongation of pregnancy is contraindicated including but not limited to:  
    o In-utero fetal death  
    o Lethal fetal anomalies  
    o Suspected fetal compromise  
    o Maternal bleeding with hemodynamic instability  
    o Severe preeclampsia  
    o Placental abruption  
    o Chorioamnionitis |
5.4.1 Nifedipine

Table 14. Nifedipine

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>• Nifedipine is a calcium channel blocker that relaxes smooth muscle(^56)</td>
</tr>
<tr>
<td></td>
<td>• Nifedipine is the tocolytic of choice(^57,58)</td>
</tr>
<tr>
<td><strong>Contraindications(^*)</strong></td>
<td>• If there are contraindications to Nifedipine, liaise with an Obstetrician to determine alternate tocolysis</td>
</tr>
<tr>
<td></td>
<td>• Contraindications include(^56):</td>
</tr>
<tr>
<td></td>
<td>o Maternal hypotension or cardiac disease</td>
</tr>
<tr>
<td></td>
<td>o Previous adverse reaction to calcium channel blockers</td>
</tr>
<tr>
<td><strong>Dose(^*)</strong></td>
<td>• Nifedipine 20 mg oral stat(^56)</td>
</tr>
<tr>
<td></td>
<td>• If contractions persist after 30 minutes repeat Nifedipine 20 mg oral(^56)</td>
</tr>
<tr>
<td></td>
<td>• If contractions persist after a further 30 minutes repeat Nifedipine 20 mg oral</td>
</tr>
<tr>
<td><strong>Maintenance(^*)</strong></td>
<td>• If BP stable, Nifedipine 20 mg oral every 6 hours for 48 hours</td>
</tr>
<tr>
<td></td>
<td>• Further maintenance therapy is ineffective(^54)</td>
</tr>
<tr>
<td></td>
<td>• Maximum dose is 160 mg/day(^56)</td>
</tr>
<tr>
<td><strong>Comments(^*)</strong></td>
<td>• Do not use sustained release formulation</td>
</tr>
<tr>
<td></td>
<td>• Concomitant use with Magnesium Sulfate may increase effects of Magnesium Sulfate and the risk of hypotension. Use cautiously with Magnesium Sulfate(^56)</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>• CTG until contractions cease (relative to gestation)</td>
</tr>
<tr>
<td></td>
<td>• BP, pulse and respiratory rate</td>
</tr>
<tr>
<td></td>
<td>o Every thirty minutes for first hour, then hourly for four hours</td>
</tr>
<tr>
<td></td>
<td>o Review frequency in accordance with clinical circumstances</td>
</tr>
<tr>
<td></td>
<td>• Temperature every four hours</td>
</tr>
</tbody>
</table>

5.4.2 Other tocolytics

Table 15. Other tocolytics

<table>
<thead>
<tr>
<th>Tocolytic</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Betamimetics (Salbutamol)(^*)</strong></td>
<td>• Compared to placebo, betamimetics are effective tocolytic agents(^59,60) but significant adverse side effects including maternal death from pulmonary oedema have been reported(^60)</td>
</tr>
<tr>
<td></td>
<td>• No evidence to support oral betamimetics for maintenance after threatened preterm labour(^61)</td>
</tr>
<tr>
<td></td>
<td>• Not recommended unless there are contraindications to other tocolytics</td>
</tr>
<tr>
<td><strong>Inhibitors of prostaglandin synthesis (Indomethacin)(^*)</strong></td>
<td>• Potent inhibitor of uterine contractility by inhibiting cyclo-oxygenase (COX) enzyme(^59) but limited high level evidence with few adequate trials(^62)</td>
</tr>
<tr>
<td></td>
<td>• Risks for the fetus and neonate include(^62):</td>
</tr>
<tr>
<td></td>
<td>o Constriction of the fetal ductus arteriosus (increased risk with advancing gestational age; the effects are transient and reversible with short term administration; longer administration may lead to pulmonary hypertension in the fetus and neonate)</td>
</tr>
<tr>
<td></td>
<td>o Alteration of fetal, especially cerebral, blood flow</td>
</tr>
<tr>
<td></td>
<td>o Reduced renal function (may result in oligohydramnios)</td>
</tr>
<tr>
<td></td>
<td>o Necrotising enterocolitis</td>
</tr>
<tr>
<td></td>
<td>• Because of the potential adverse fetal and neonatal effects, consider use of Indomethacin only where:</td>
</tr>
<tr>
<td></td>
<td>o Gestational age is less than 28+0 weeks</td>
</tr>
<tr>
<td></td>
<td>o There is failure to achieve tocolysis with other tocolytic regimens</td>
</tr>
<tr>
<td></td>
<td>o Contraindications to other tocolytics exist (e.g. cardiac disease)</td>
</tr>
<tr>
<td></td>
<td>• With Indomethacin administration, ensure close monitoring of fetal wellbeing</td>
</tr>
</tbody>
</table>

\(^*\)Refer to an Australian pharmacopoeia for complete drug information
### 5.5 Antibiotics

#### Table 16. Antibiotics

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm labour (or imminent risk of PTB)</td>
<td>• If preterm labour ensues or there is imminent risk of PTB, give intrapartum antibiotic prophylaxis for prevention of Early onset Group B streptococcal disease irrespective of GBS status or membrane status&lt;br&gt;• Refer to Queensland Clinical Guideline Early onset Group B Streptococcus disease[1]</td>
</tr>
<tr>
<td>(or imminent risk of PTB) without evidence</td>
<td>Sign of chorioamnionitis include:&lt;br&gt; &lt;ul&gt;&lt;li&gt;Maternal fever greater than 38°C (present in 95–100% of cases)[64]&lt;/li&gt;&lt;li&gt;Maternal tachycardia greater than 100 beats per minute (bpm) (present in 50–80% of cases)[64]&lt;/li&gt;&lt;li&gt;Fetal tachycardia greater than 160 bpm (present in 40–70% of cases)[64]&lt;/li&gt;&lt;li&gt;Uterine tenderness[64]&lt;/li&gt;&lt;li&gt;Offensive smelling vaginal discharge[64]&lt;/li&gt;&lt;li&gt;Increased white cell count[64] (greater than 15x10⁹/L)&lt;/li&gt;&lt;li&gt;Elevated C-Reactive Protein (CRP)[64]&lt;/li&gt;&lt;/ul&gt;• Do not inhibit labour, but consider hastening birth under broad spectrum intravenous antibiotic cover&lt;br&gt;• Suspect chorioamnionitis in women with PPROM if labour ensues&lt;br&gt;• Optimal antibiotic regimen not established. If no local protocols exist suggested regimen[65]:&lt;br&gt; &lt;ul&gt;&lt;li&gt;Ampicillin (or Amoxicillin) 2 g IV initial dose, then 1 g IV every 6 hours&lt;/li&gt;&lt;li&gt;Gentamicin 5 mg/kg IV daily&lt;/li&gt;&lt;li&gt;Metronidazole 500 mg IV every 12 hours&lt;/li&gt;&lt;/ul&gt;• If allergic to Penicillin&lt;br&gt; &lt;ul&gt;&lt;li&gt;Lincomycin 600 mg IV in 100 mL over 1 hour every 8 hours OR ^Clindamycin 600 mg IV in 50–100 mL over at least 20 minutes every 8 hours&lt;/li&gt;&lt;li&gt;Gentamicin 5 mg/kg IV daily&lt;/li&gt;&lt;li&gt;Metronidazole 500 mg IV every 12 hours&lt;/li&gt;&lt;/ul&gt;• Continue antibiotic treatment after birth&lt;br&gt;• Consider oral antibiotics once afebrile and tolerating oral medication</td>
</tr>
<tr>
<td>of chorioamnionitis*</td>
<td>Preterm labour does not commence</td>
</tr>
<tr>
<td>(Intact or ruptured membranes)*</td>
<td>Routine administration of prophylactic antibiotics to women in threatened preterm labour with intact membranes and without evidence of infection is not recommended[66]&lt;br&gt;• If preterm labour does not commence and no other indications, then with:&lt;br&gt; &lt;ul&gt;&lt;li&gt;Intact membranes, cease antibiotics&lt;/li&gt;&lt;/ul&gt;• If PPROM refer to Queensland Clinical Guideline: Early onset Group B Streptococcal disease[1]</td>
</tr>
</tbody>
</table>
|                                             | *Refer to an Australian pharmacopoeia for complete drug information<br>^Clindamycin IV is not on the Queensland Health (QH) List of Approved Medications (LAM) therefore QH clinicians should give Lincomycin
5.6 Magnesium Sulfate for neuroprotection

Table 17. Magnesium Sulfate for neuroprotection

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Magnesium Sulfate (MgSO₄) given to mothers shortly before birth is believed to reduce the risk of cerebral palsy and protect gross motor function in those infants born preterm⁶⁷</td>
</tr>
<tr>
<td></td>
<td>- Number needed to treat (NNT): 63 babies for one baby to avoid cerebral palsy (95% CI 44–155)⁶⁸</td>
</tr>
<tr>
<td></td>
<td>- NNT to benefit (NNTB): 42 babies for combined death or cerebral palsy (95% CI 24–346)⁶⁸</td>
</tr>
<tr>
<td></td>
<td>- The effect may be greatest at early gestations and is not associated with adverse long-term fetal or maternal outcome⁶⁷,⁶⁹</td>
</tr>
<tr>
<td></td>
<td>- In one follow-up RCT study MgSO₄ was not associated with improved neurological, cognitive, behavioural, growth or functional outcomes in school age children although mortality advantage could not be excluded⁷⁰</td>
</tr>
<tr>
<td>Recommendation*</td>
<td>Recommend MgSO₄ to women between 24+0 and 30+0 weeks gestation where birth is expected or planned within 24 hours</td>
</tr>
<tr>
<td></td>
<td>- When birth is planned, commence administration as close to four hours prior to birth as possible⁶⁹</td>
</tr>
<tr>
<td></td>
<td>- Best effect when given for at least four hours within the six hours prior to birth</td>
</tr>
<tr>
<td></td>
<td>- If birth is expected to occur within four hours, commence MgSO₄ immediately, as there may still be benefit from administration⁶⁹</td>
</tr>
<tr>
<td></td>
<td>- In situations where urgent birth is necessary, do not delay birth to administer MgSO₄⁶⁹</td>
</tr>
<tr>
<td></td>
<td>- If birth does not occur after giving MgSO₄ and PTB (less than 30 weeks’ gestation) again appears imminent (planned or expected within 24 hours), a repeat dose of MgSO₄ may be considered at the discretion of the obstetrician⁶⁹</td>
</tr>
<tr>
<td></td>
<td>- Refer to Appendix A: Magnesium Sulfate for fetal neuroprotection</td>
</tr>
</tbody>
</table>

*Refer to an Australian pharmacopoeia for complete drug information

5.7 Mode of preterm birth

Table 18. Mode of preterm birth

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>There is insufficient high quality evidence about whether mode of birth affects neonatal morbidity and outcomes⁷¹</td>
</tr>
<tr>
<td></td>
<td>Preterm CS is usually technically more difficult to perform and is not without risk to the baby⁷² as the lower segment is usually not well formed</td>
</tr>
<tr>
<td></td>
<td>- A classical incision may be required with risks to future pregnancies including scar dehiscence, uterine rupture, placental adherence and maternal death⁷³</td>
</tr>
<tr>
<td></td>
<td>- Discuss implications of decision with the woman</td>
</tr>
<tr>
<td></td>
<td>- Early consultation with anaesthetic team required</td>
</tr>
<tr>
<td>Singleton vertex</td>
<td>Recommend vaginal birth unless there are specific contraindications to vaginal birth or maternal conditions necessitating CS</td>
</tr>
<tr>
<td>Breech presentation ≥ 26+0 weeks</td>
<td>The evidence regarding optimal mode of birth for preterm breech is conflicting and unclear due to a lack of high quality studies⁶¹,⁶⁴,⁶⁵</td>
</tr>
<tr>
<td></td>
<td>Base decisions on individual circumstances and maternal preferences</td>
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<tr>
<td></td>
<td>CS is not generally recommended where vaginal birth is imminent</td>
</tr>
<tr>
<td>≤ 25+6 weeks gestation (vertex or breech)</td>
<td>CS for fetal indications alone not generally recommended at less than 25+0 weeks gestation ¹⁰</td>
</tr>
</tbody>
</table>
6 Management after threatened preterm labour

When PTB does not occur following admission for threatened preterm labour, coordinate care and discharge planning with the family, relevant health care professionals and the referring hospital (as required).

Table 19. Management after threatened preterm labour

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prolonged admission</td>
<td>• Plan care relevant to the underlying clinical circumstances</td>
</tr>
<tr>
<td></td>
<td>• Use clinical judgement and as clinically appropriate consider:</td>
</tr>
<tr>
<td></td>
<td>o Consultation/Referral/Transfer</td>
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<tr>
<td></td>
<td>o Serial TVCL</td>
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<td></td>
<td>o Progesterone</td>
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<td></td>
<td>o Fetal assessments</td>
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<td></td>
<td>o Maternal investigations and assessments</td>
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<td></td>
<td>o Repeat fFN testing</td>
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<td></td>
<td>o Planning for PTB</td>
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<td></td>
<td>o Frequency of clinical observations (e.g. temperature, blood pressure)</td>
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<tr>
<td>Back transfer</td>
<td>• If discharge home is not considered an option, transfer back to the referring hospital where feasible</td>
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<tr>
<td></td>
<td>• Take into account:</td>
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<tr>
<td></td>
<td>o Individual clinical circumstances and likelihood of PTB</td>
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<td></td>
<td>o Gestational age and maternity and neonatal clinical service capability of the receiving hospital</td>
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<tr>
<td></td>
<td>o Access to required ongoing monitoring/clinical surveillance</td>
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<td></td>
<td>o Preferences of the woman and her family</td>
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<td></td>
<td>o Retrieval logistics and aircraft availability</td>
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<tr>
<td>Discharge</td>
<td>• Consider usual discharge criteria including:</td>
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<tr>
<td></td>
<td>o Maternal vital signs</td>
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<td></td>
<td>o Signs of chorioamnionitis</td>
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<td></td>
<td>o Membrane status</td>
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<td></td>
<td>o Contractions infrequent/irregular</td>
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<td></td>
<td>o Cervical change/TVCL (if measured)</td>
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<td></td>
<td>o Normal CTG relevant to gestational age</td>
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<tr>
<td></td>
<td>o fFN test result</td>
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<td></td>
<td>• Provide the woman with information that:</td>
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<tr>
<td></td>
<td>o Aids her recognition of the signs and symptoms of preterm labour</td>
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<tr>
<td></td>
<td>o Identifies risk reduction measures appropriate to the circumstances (e.g. fluids, sexual activity)</td>
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<td></td>
<td>o Provides instruction about when to seek clinical advice</td>
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<tr>
<td></td>
<td>o Refer to Appendix B: Consumer advice after threatened preterm labour</td>
</tr>
<tr>
<td></td>
<td>• Determine follow-up and on-going clinical surveillance requirements</td>
</tr>
<tr>
<td>Referral and follow-up</td>
<td>• Inform the woman, the usual health care provider and/or referring hospital about the recommendations for follow-up and ongoing clinical surveillance</td>
</tr>
<tr>
<td></td>
<td>• Offer social worker referral as indicated</td>
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<tr>
<td></td>
<td>• Inform the General Practitioner about the episode of care</td>
</tr>
</tbody>
</table>
References


### Appendix A: Magnesium Sulfate for fetal neuroprotection

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| **Resources**               | • One to one midwifery care in birth suite or high dependency unit for the duration of therapy  
• Resuscitation and ventilator support immediately available  
• Calcium Gluconate 1 g available in case of respiratory depression |
| **Contraindications**       | • Maternal cardiac conduction defects (heart block) contraindicated  
• Hypermagnesaemia contraindicated  
• Maternal myasthenia gravis use cautiously and monitor closely  
• Concomitant Nifedipine use cautiously and monitor closely  
• Reduced renal function monitor plasma magnesium level/urine output |
| **Route**                   | • IV infusion via controlled infusion device |
| **Loading dose**            | • 4 g IV bolus over 20 minutes |
| **Maintenance dose**        | • 1 g/hour for 24 hours or until birth, whichever occurs first |
| **Side effects**            | • Related to hypermagnesaemia  
• Common (> 1%): nausea and vomiting, flushing  
• Infrequent (0.1–1%): headache, dizziness |
| **Baseline observations**   | • Vital signs: BP, pulse, respiratory rate  
• Oxygen saturation (SpO₂)  
• Patellar reflex  
• Abdominal palpation  
• Monitor contractions for 10 minutes  
• FHR/CTG |
| **Monitoring during loading dose** | • BP, pulse, and RR every 5 minutes (for minimum 20 minutes) until stable  
• SpO₂ continuously  
• Contractions for 10 mins every 30 mins  
• Continuous CTG if greater than or equal to 24 weeks gestation  
  o Interpret CTG relevant to gestational age if less than 28 weeks  
  o Document reason if CTG not able to be performed  
• Auscultate FHR every15–30 minutes if less than 24 weeks gestation  
• Observe for side effects  
• Check deep tendon reflexes (patellar or, if epidural insitu, biceps) after completion of loading dose  
  o Notify obstetrician if absent and do not commence maintenance dose |
| **Monitoring during maintenance dose** | • BP, pulse, respiratory rate, SpO₂ every 30 minutes  
• Temperature every 2 hours  
• Contractions for 10 mins every 30 mins  
• Continuous CTG if greater than or equal to 24 weeks gestation  
  o Interpret CTG relevant to gestational age if less than 28 weeks  
• Auscultate FHR every15–30 minutes if less than 24 weeks gestation  
• Strict fluid balance monitoring and documentation  
  o Notify medical officer if urine output less than 25 mL/hour  
• Deep tendon reflexes hourly  
  o Record as A=Absent, N=Normal, B=Brisk |
| **Monitoring post infusion** | • Repeat baseline observations/vital signs  
• Minimum 4 hourly or more frequently as clinically indicated  
• Serum monitoring not usually required if renal function normal  
  o Therapeutic serum magnesium levels are 1.7–3.5 mmol/L |
| **Discontinuation and urgent medical review** | • Respiratory rate less than 12 breaths/minute or more than 4 breaths/minute below baseline  
• Diastolic BP decreases more than 15 mmHg below baseline  
• Absent deep tendon reflexes  
• Urine output less than 25 mL/hour or less than 100 mL over 4 hours  
• Magnesium serum levels greater than 3.5 mmol/L |

Appendix B: Consumer advice after threatened preterm labour

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Discussion point</th>
</tr>
</thead>
</table>
| What is preterm labour?             | • It is normal for your uterus to contract now and then during pregnancy  
• Preterm labour is when you have frequent contractions along with the opening of your cervix before the 37<sup>th</sup> completed week of pregnancy  
• Even if you do everything right, you can still have preterm labour |
| Signs of preterm labour             | • Contractions that make your belly tighten up like a fist every 10 minutes or more often  
• Cramps that feel like your period  
• Low dull backache  
• The feeling that your baby is pushing down, called pelvic pressure  
• Belly cramps with or without diarrhoea  
• Change in the colour of your vaginal discharge  
• General feeling that something is not right  
• Bleeding from your vagina |
| Call your health care provider       | • Your baby stops moving  
• Your waters break  
• You have regular contractions  
• You have any bleeding from your vagina  
• You have a low dull backache. The pain may be felt in your lower back or move to your sides or front  
• You have a high temperature more than 38°C  
• You are worried or unsure |
| immediately if:                      |                                                                                                                                                                                                                  |
| Activity                            | • Many women have more contractions when they are active. This is normal and there is no proof that restricting your activity will reduce your risk of preterm birth. However, your health care provider may recommend that you limit your activity level for a period of time  
• If you begin to have contractions while active, stop what you are doing and lie down on your side. Drink 2–3 glasses of water or juice, monitor your contractions and call your care provider. If you have diabetes do not drink juice |
|                                     | □ Limited activity  
Most of the time you should lie down on your side. You may be up during the day for short periods of time (less than 30 minutes). No heavy work or lifting |
|                                     | □ Extended activities  
You should lie down at least once in the morning and once in the afternoon for about 2 hours. No heavy work, gardening or lifting. You need to be off work outside the home |
|                                     | □ No activity restrictions  
You may resume your normal activities |
| Sexual activity                     | • Having sex or orgasm may cause uterine contractions  
• Do not have sex until your health care provider says it is okay |
| Diet                                | • You need to eat well for you and your baby’s health  
• Pick foods that are high in iron, calcium and fibre such as red meat, cheese and bran muffins |
| Fluids                              | • Women who get dehydrated sometimes have more uterine contractions  
• Drink 6–8 glasses of fluid a day  
• Water, non-fat or low fat milk and fruit juice are good choices. If you have diabetes do not drink juice |
| Stool softeners                     | • Constipation (hard stools) is a common problem. The stool softener is to prevent constipation. If you get constipated, drink lots of water and eat foods with fibre  
• You can also ask your health care provider for help with constipation |

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