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**GUIDELINE**

**TITLE:** PRETERM LABOUR AND BIRTH

**AUTHOR:** Consultant Obstetrician & Gynaecologist and Midwife Educator & Quality Coordinator

**SCOPE:** All midwives, nurses, obstetricians and paediatricians working in the maternity and neonatal unit.

**POLICY STATEMENTS:**

To provide guidance for the care of women with identified risk factors for pre-term birth, so that care can be offered and provided which may reduce the risk of pre-term birth and perinatal morbidity/mortality.

To assist with the appropriate decision making in the assessment, diagnosis and intervention for women presenting with preterm labour (PTL).

To provide guidance on when and how to inhibit preterm labour.

To provide guidance on the management of preterm labour and birth and on procedures around transfer of a woman with preterm labour.

**DEFINITIONS:** Preterm labour is defined as labour commencing  $\geq 20+0$  weeks gestation and  $< 37+0$  weeks gestation.

Preterm labour (PTL) is usually defined as occurring at less than 37+0 weeks gestation. However, inhibition of labour is normally attempted only in EARLY preterm labour occurring **after 23+0 weeks and prior to 35+0 weeks** gestation. For this reason, the term PTL as used in this guideline, will be assumed to be labour between 23+0 and 34+6 weeks.

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**PREVENTION OF PRETERM LABOUR AND BIRTH**

Preterm birth is a common cause of perinatal morbidity/mortality. It may also have a significant lifelong impact on health.

Antenatal evaluation of all women should include assessment of risk for preterm birth. If indicated, consider possible cervical length screening, and referral for further management.

Progesterone therapy and cerclage in appropriate women has been shown to decrease the incidence of preterm birth in patients at risk.

**RISK FACTORS:**

There are a variety of risk factors that can predispose a woman to preterm labour and preterm birth. Most prominent among these are a prior history of preterm birth, cervical surgery, and multiple gestation.

**RISK ASSESSMENT AND MANAGEMENT** (see Appendix 1 for flowchart)

- 1) If a woman has had two or more mid trimester losses, she should be referred by fourteen weeks for consideration of cervical cerclage. If the woman agrees to cerclage placement, this should be removed at 36+0 – 37+0 weeks.
- 2) If there is no history of mid trimester losses, but the woman has had a history of cervical surgery (cone biopsy, cervical trauma, more than one LLETZ, cervix fully dilated at time of cesarean section), then a trans-vaginal ultrasound scan should be offered and ordered by the LMC for 14+0-16+6 weeks. If the cervical length <30 mm, the LMC should refer the woman to antenatal clinic for a consult. Serial scanning is sometimes indicated in these women. If the woman has a cervix that is consistently greater than 25 mm at 24+0 weeks, she can be discharged back to her LMC for ongoing care. Cervical lengths less than 25 mm are associated with a higher incidence of preterm birth and Utrogestan therapy can be recommended for these women. Utrogestan is typically prescribed as 200 mg vaginally daily, from 16+0 – 24+0 weeks until 36+0 weeks gestation. For continued shortening, consider cerclage if less than 24+0 weeks, steroids for > 23+0 weeks.
- 3) If the woman has had neither mid trimester losses nor cervical surgery, but has had one or more preterm births and/or preterm premature rupture of membranes (PPROM) prior to 35+0 weeks, she should be offered a 20+0 week trans-vaginal screening scan with her anatomy scan and be referred for possible Utrogestan therapy.
- 4) For all other women, a trans-abdominal cervical length ultrasound will be done in conjunction with her anatomy ultrasound scan. If the trans-abdominal scan demonstrates a cervix of  $\geq 35$  mm, no further action need be taken. If the cervical length is < 35 mm, a reflex trans-vaginal ultrasound scan will be offered. If the trans-vaginal scan confirms a cervix of <30 mm, she should be referred to Antenatal clinic.
- 5) Any other patients under 24+0 weeks of pregnancy incidentally discovered to have a trans-vaginal cervical length of < 30 mm should be referred to antenatal clinic for possible Utrogestan therapy.

**ADDITIONAL NOTES**

Options for treatment include progesterone therapy and cerclage. Both have been shown to decrease the incidence of preterm delivery and neonatal morbidity in women with a history of preterm birth.

17 alpha hydroxyprogesterone caproate intramuscularly administered weekly starting at 16+0-20+0 weeks and stopping at 36+0 weeks has been shown to decrease the risk of preterm birth in women who have had at least one prior preterm birth. However, this medication is not available in New Zealand. Therefore, at Hauora Tairāwhiti, we recommend the use of Utrogestan capsules 200 mg intravaginally, daily, from 16+0-20+0 weeks to 36+0 weeks in those women with a prior history of preterm birth before 37 weeks of gestation. There is debate about the benefits of vaginal progesterone, however it has not been shown to cause harm and has been shown to decrease the rate of neonatal death and neonatal brain injury. Unfortunately Utrogestan is only subsidized for women with a history of preterm birth less than 28+0 weeks or a cervical length less than 25 mm before 24+0 weeks.

Placement of cerclage upon identification of a short cervix (“ultrasound-indicated cerclage”) is effective in reducing preterm birth in appropriate cases. The benefit of ultrasound-indicated cerclage may derive from bolstering cervical strength, preventing membranes from being exposed, and retention of the mucus plug. Women who have cerclage placement may also be offered progesterone. The type of therapy offered will depend on the assessed degree of risk. For those women who have previously birthed a preterm infant who are noted to have a cervical length <25 mm, cerclage has been shown to be beneficial and should be offered.

Progesterone has not been shown to prevent preterm birth in twin gestations in those without a history of a prior singleton preterm birth and is not recommended in this group of women. Whether progesterone is beneficial for those women with twins who have had a prior singleton preterm birth is unclear as such a sub-group analysis was not done in twins studies. However, since these women have the same risk factors as those with singletons and a prior singleton preterm birth (or PPROM) for recurrent preterm delivery, in addition to their risk of preterm birth due to twins, it is reasonable to offer progesterone to women carrying twins who have a history of preterm birth or PPROM. Similarly, for women with twin pregnancies and a short cervix in the current pregnancy but no history of preterm delivery, it is reasonable to also offer vaginal progesterone.

**INHIBITION OF PRETERM LABOUR/TOCOLOSYS**

**PURPOSE:** The aim of tocolysis is to inhibit uterine activity usually for a short term (48-72 hours), in order to administer corticosteroids to enhance fetal lung maturity or to facilitate transfer to Waikato Hospital or other Tertiary Hospital.

**DEFINITIONS:** Preterm labour (PTL) is usually defined as occurring at less than 37+0 weeks gestation. However, inhibition of labour is normally attempted only in EARLY preterm labour occurring **after 24+0 weeks and prior to 34+6 weeks** gestation. For this reason, the term PTL as used in this guideline, will be assumed to be labour between 24+0 and 34+6 weeks.

**GUIDELINE:** A **diagnosis of PTL** is made when regular uterine contractions are present, accompanied by effacement and/or dilatation of the cervix. Contractions alone without cervical changes are not definitive of labour. If PTL is suspected the obstetrician on call should be notified.

In all cases of suspected preterm labour, please follow the flow chart in appendix 3 in consultation with the obstetrician.

Preterm labour <34+0 weeks requires a transfer of care. From 34+0 – 37+0 weeks a consultation is required.

Tocolytic therapy may abolish contractions temporarily, but it will not remove the underlying stimulus which initiated the process or reverse the changes in the uterus.

The aims of inhibition of preterm labour are to:

1. Delay delivery by at least 48 hours so that steroids may be administered to the mother and achieve their maximum effect on the fetus;
2. Provide time for safe transport of the mother to a tertiary facility;
3. Prolong pregnancy when there are underlying, self-limited conditions that can cause labour such as pyelonephritis or abdominal surgery, and are unlikely to cause recurrent PTL.

**Decision to Use Tocolysis**

Inhibition of PTL is less likely to be successful where cervical dilatation is greater than 3cms but may still be beneficial in order to administer maternal steroids or safely transport the mother to a tertiary unit. Tocolysis may not be appropriate when there is a risk to mother or fetus from continuation of pregnancy.

If tocolytic therapy does not inhibit PTL successfully, the clinical condition of mother and baby should be reviewed and the ongoing appropriateness of tocolysis considered.

There is no high quality evidence of the efficacy of bedrest for the prevention or treatment of PTL in singleton pregnancy.

**Contraindications and precautions:**

Tocolysis is contraindicated when the maternal/fetal risks of prolonging pregnancy or the risks associated with tocolytics are greater than the risks associated with preterm birth.

Contraindications include:

- Intrauterine death
- Lethal fetal anomaly
- Suspicion of fetal compromise
- Severe fetal growth restriction
- Maternal cardiac disease
- Maternal cardiac arrhythmia
- Placental abruption
- Thyrotoxicosis
- Severe pre-eclampsia
- Chorioamnionitis
- PPRM
- Uncontrolled diabetes
- Sensitivity to calcium channel blockers (nifedipine)

Relative contraindications to inhibition of preterm labour include:

- gestational age >34+6 weeks
- major fetal anomaly
- abnormal CTG
- suspected minor placental abruption
- intrauterine growth restriction

**On admission** - If PTL is progressive, go to management of preterm labour & birth guideline, otherwise assess situation and:

1. Consult with obstetrician immediately using the SBARR tool.
2. Maternal baseline observations are to be recorded including temperature to exclude signs of infection.
3. Abdominal examination – palpate and assess for; uterine contractions, uterine tone, uterine tenderness, fetal and uterine size (fundal height). Palpate for lie, presentation, position and engagement.

4. Ask woman for clean catch MSU specimen when possible and send to laboratory
5. Commence CTG and monitor continuously until consultant has made a decision and management plan.
6. Any leakage of fluids or vaginal discharge – go to preterm premature rupture of the membranes guideline.

**The obstetrician will formulate a plan of care following a 4 way conversation.** This plan may include the following:

- Speculum examination followed by a partosure test if cervix is less than 3 cm dilated and more than 1cm long. **Do not** use any lubricant other than water as lubricants can affect the result of a partosure test. The speculum examination will allow an inspection for ruptured membranes or infection as well as cervical dilatation. Perform a digital examination **ONLY** if findings from speculum examination are inconclusive. See flowchart Appendix three and follow Partosure guideline and flow chart.
- The aim is for the woman to have **ONLY** one vaginal examination performed by her LMC. The LMC may ask the O&G to perform this diagnostic examination with the woman's consent if she/he so wishes.
- AmniSure test for rupture of membranes if speculum test is inconclusive.
- High vaginal swab whilst using speculum.
- Complete Blood Count and other blood tests as clinically indicated.
- Insert IV line and commence intravenous antibiotics if PTL is confirmed (see PPROM and GBS guidelines).
- Inform Neonatal Unit staff/paediatrician of potential admission and update them as to ongoing management plan.
- Corticosteroid injection if <34+6 weeks gestation unless delivery is imminent.
- Nifedipine regime as per protocol as recommended by obstetrician.
- Magnesium sulphate for neuroprotection if <32+0 weeks gestation and birth expected within 24 hours – see Magnesium Sulphate Use For Imminent Preterm Birth <32 weeks Gestation – Neuroprotection guideline. It should be noted that nifedipine has synergistic effects with magnesium sulphate and that the incidence of serious adverse effects (e.g. profound hypotension or pulmonary oedema) is significantly increased with the use of more than one agent.
- Consideration of transfer out to a tertiary unit – see transfer out of maternity patients guideline.

#### **Monitoring Before and During Tocolysis**

Prior to the initial dose and before a repeat dose, record and document in the clinical notes the following observations:

- Maternal temp, respiratory rate, pulse and BP
- Fetal heart rate
- Frequency of contractions

**Nifedipine should not be administered if the maternal HR is >120 or BP<90/60**

After each dose observations should be continued every 15 minutes for 1 hour, then every 30 minutes for 2 hours and 1-4 hourly thereafter as directed by the obstetrician.

- Maternal temperature should be taken 4 hourly.
- Continuous CTG should be used for a minimum of 1 hour after the last dose or after cessation of uterine activity, whichever is longer. If there is any change in the clinical situation at other intervals, e.g. increase in maternal temperature or pulse rate or return/increase of uterine activity, then CTG monitoring should be recommenced.

### **1/ Nifedipine Tocolysis (first line)**

#### **Drug action and administration**

Nifedipine is a calcium channel blockers and acts as a uterine relaxant.

Trade Name – Nyefax Retard 20 mgs tablets (slow release Nifedipine)

Adalat 5 mg capsules (short acting Nifedipine)

Sublingual Nifedipine should not be used as this may be associated with a precipitous fall in blood pressure.

#### **Consent for procedure**

**Nifedipine 5 mg Capsules are covered under Section 29 and not registered for use in New Zealand. Prior to commencing this procedure, information should be given to the woman by the obstetrician or the midwife, about the drug and why it is recommended and patient consent must be obtained and documented in the clinical notes.** A register of doses administered must be completed and is found in the medical store room in DU.

#### **Contraindications**

Absolute

- Previous allergic response to Nifedipine or significant adverse effect

Relative

- Use of Magnesium Sulphate (risk hypotension)
- Use of Beta-blocker (risk hypotension)
- Hypotension
- Abnormal CTG

Precautions

- Heart disease/arrhythmia
- Liver disease
- Uncontrolled diabetes

#### **Side Effects**

**Adverse effects are 3-4 times more likely with a total daily dose in excess of 60mg**

- Hypotension;

Short acting nifedipine can cause a rapid fall in blood pressure. Normotensive women usually experience a small drop in blood pressure, however, pre-eclamptic women can experience an acute drop in blood pressure and this must be considered carefully before commencement. Hypotension can be profound if used concurrently with magnesium sulphate.

- Transient palpitations/arrhythmias (0 – 6%)

- Headaches (5 – 6%)
- Facial flushing (5 – 18%)
- Less common side effects are: constipation, dizziness, nausea, tachycardia, fatigue, peripheral oedema and increased liver enzymes. Liver enzyme changes are not a concern with such limited use, but are of concern in those with known liver disease.

**Dose schedule** (see Nifedipine tocolysis flowchart on page 8)

#### **Initial doses**

Tocolysis with short acting Nifedipine is initiated with 10mgs short acting nifedipine orally. If contractions persist, further 10mg doses can be given every 15 minutes for a maximum for 4 doses.

**Note that the recommended maximum dose in the first hour is 40 mgs.**

#### **Maintenance dose**

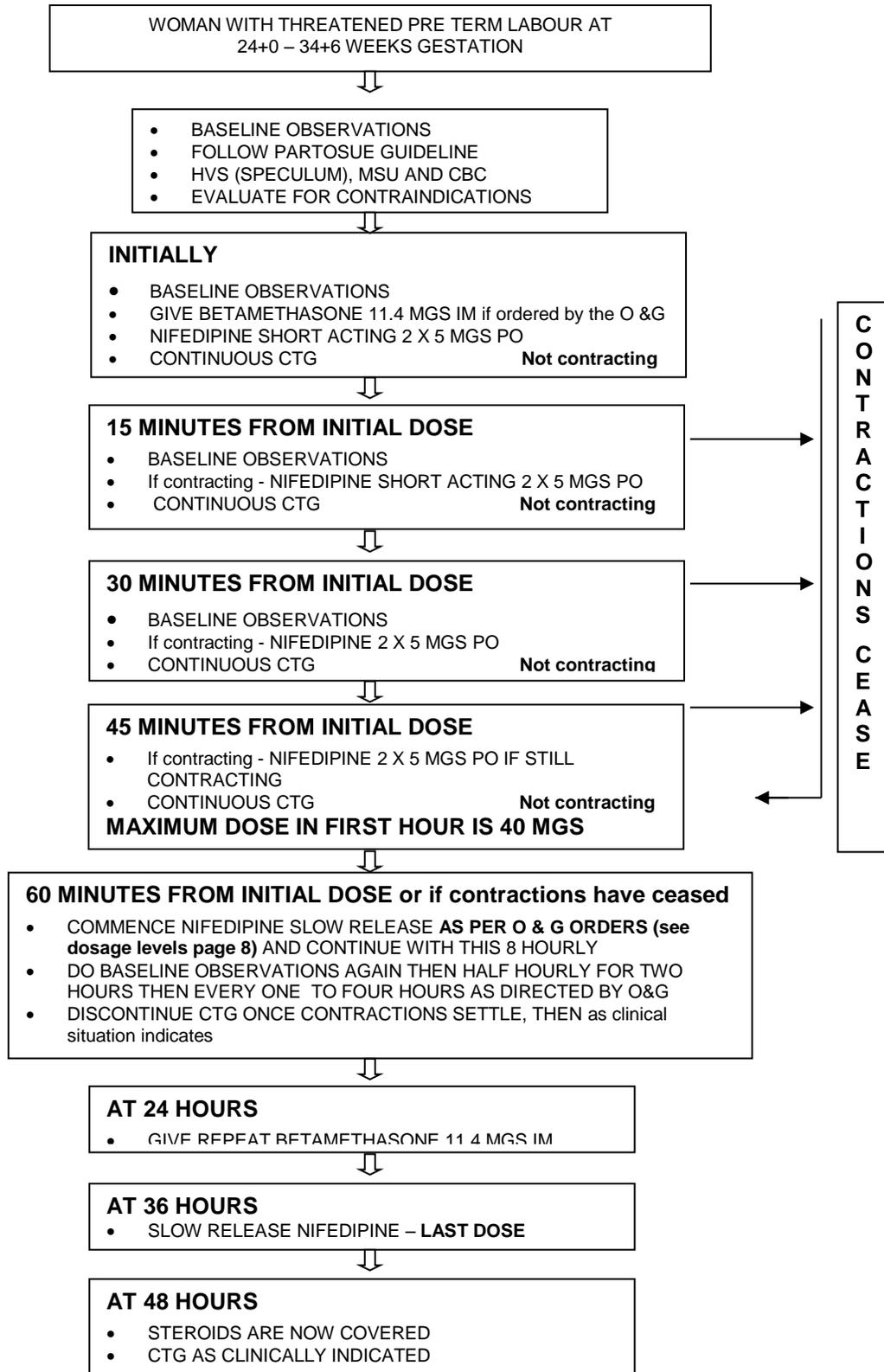
The maintenance dose is 20mg tds slow release nifedipine until steroids or transfer is completed. An additional 20mg dose may be given at the discretion of the obstetrician. Maximum duration of use is 48h.

The first slow release Nifedipine may be given an hour after the last dose of short acting Nifedipine.

**Note that the recommended maximum dose in 24h hour is 60 mgs.**

The obstetrician must prescribe nifedipine on the medication chart or using a verbal telephone order (see safe management of medicines policy).

**NIFEDIPINE TOCOLYSIS FLOWCHART**



**PRETERM LABOUR AND BIRTH MANAGEMENT**

**PURPOSE:** The purpose of this guideline is to assist with the appropriate decision making in the assessment, diagnosis and intervention for women presenting with preterm labour (PTL).

**DEFINITIONS:** Preterm labour is defined as labour commencing  $\geq 20+0$  weeks gestation and  $< 37+0$  weeks gestation.

**GUIDELINE:****Criteria and diagnosis**

A **diagnosis of PTL** is made when regular uterine contractions are present accompanied by effacement and/or dilatation of the cervix. Contractions alone without cervical changes are not definitive of labour. If PTL is suspected, consult with the obstetrician using SBARR tool.

Criteria to document Preterm Labour:

1. Contractions – **adequate to cause** progressive cervical changes.
2. Cervical dilatation greater than 1 cm
3. Cervical effacement of 80% or greater.

From 24+0 – 32+0 weeks gestation, PTL is ideally actively managed in a tertiary hospital, which has NNU Level III facilities. Please refer to [Partosure](#) guideline and [Transfers out of Maternity - Obstetric](#) guideline.

Tocolytic therapy may abolish contractions temporarily (see [Inhibition of Preterm labour](#) guideline), but it will not remove the underlying stimulus which initiated the process or reverse the changes in the uterus.

After 34+6 weeks gestation, in most cases the labour will not be inhibited.

Please follow the [GBS – Prevention of Neonatal GBS](#) guideline once in established labour.

PTL at 34+0 - <37+0 weeks gestation requires LMCs to consult with the obstetric team, whereas PTL <34+0 weeks requires LMCs to transfer clinical responsibility to the obstetric team as per referral Guidelines.

**Contributing risk factors for PTL**

- History of previous PTL
- History of previous pre labour premature rupture of membranes (PPROM) in this pregnancy
- Infection – genito-urinary tract, viral, bacterial, other
- Uterine abnormality – e.g. bicornuate uterus, fibroids,
- Cervical anomalies – e.g., incompetent cervix, cervical surgery,
- Maternal trauma – e.g. Motor Vehicle Accident, domestic violence,
- Multiple pregnancy
- Other pregnancy or medical complications – APH in current pregnancy, abruption in current pregnancy, diabetes, maternal cardiac condition

- Smoking and/or recreational drug abuse
- Age (adolescent, advanced maternal age)
- Poor socio-economic status
- Ethnicity
- Prior caesarean section with full cervical dilation at time of surgery
- Cervical length in pregnancy <25 mm before 24+0 weeks gestation

Please note: most cases are idiopathic, i.e. they arise spontaneously or from an obscure or unknown cause.

### **1) Management of women with threatened PTL**

#### **A) Assessment of PTL at Te Puia Springs Hospital or out of town at home**

- The woman is seen and assessed as a threatened or confirmed PTL by practitioner.
- The referring practitioner consults with the on call O&G at HT. If he/she is unavailable the shift coordinator will take the call (see appendix 3)
- Request urgent transfer required of woman with threatened/confirmed PTL to Delivery Unit at HT.
- From Te Puia - **Fax to 06 869 0550** all relevant details to Delivery Unit (DU) immediately (see appendix 3)
- After discussion with obstetrician/shift coordinator, the obstetrician is to authorise and request appropriate transport.
- Ensure DU shift co-ordinator and admission clerk aware of clinical details of the transfer.

#### **B) Threatened PTL within Gisborne area**

- It is recommended that the LMC performs the primary clinical assessment if preterm labour is threatened.
- It is recommended that the LMC should perform the initial clinical assessment in the most appropriate setting. If her suspicion of PTL based on triage is high, then the ideal location for her clinical assessment is likely the DHB. If suspicion of PTL is low then the preferred location for clinical assessment may well be the woman's home or LMC's usual clinic space.

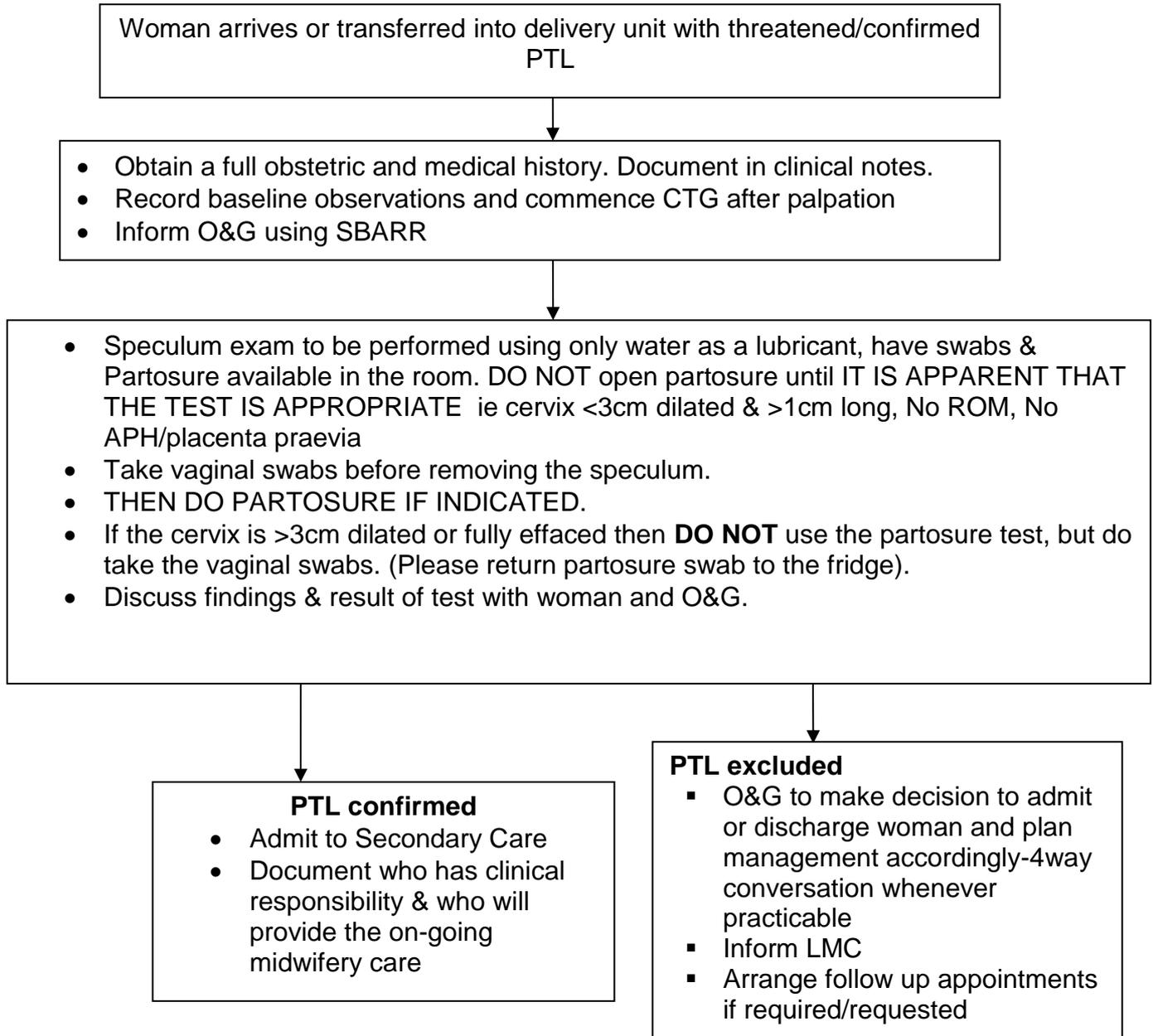
#### **Information required for assessing need for transfer or retrieval of a woman presenting with PTL from outlying areas:**

**Please note:** in utero transfer is preferable from outlying areas or hospitals.

The following information and steps should be followed:

- Obtain a comprehensive history from the referring practitioner. Fax all relevant information to DU prior to patient arrival. Include referral letter, registration admission details, all available medical/obstetric details, if support person coming and may require accommodation, etc.
- Inform and discuss with O&G
- Discuss with on call paediatrician re neonatal cot availability.
- Inform the shift co-ordinator on duty.
- Get ETA if possible and mode of transport in order to prepare for admission
- Inform Duty Nurse Manager
- See [Transfers Out Of Maternity – Obstetric](#) guideline

**2) Flow chart - Assessment of PTL at Gisborne DU**



**3) Management of confirmed PTL in DU**

- Continuous CTG monitoring or as indicated by O&G
- Ensure IV access and bloods for CBC, U & E's and Group & Save **as ordered**
- Administer medications as prescribed such as:
  - Steroids – [Administration of antenatal corticosteroids](#) guideline
  - Antibiotics – [PPROM](#) or [GBS – Prevention of Neonatal GBS](#) guidelines
  - Tocolytic Therapy – [Inhibition of preterm labour](#) guideline
  - Neuroprotection - [Magnesium Sulphate for Neuroprotection if <32/40](#) guideline
  
- Notify and update LMC and NNU on woman's status. If possible arrange a visit from NNU staff/paediatrician to discuss implications and care of a premature infant with the woman and her family/whanau
- Clinical care is the responsibility of HT obstetric team if the woman is <34+0 weeks gestation. The midwifery care may be transferred to the core midwifery team in negotiation with the LMC, the obstetric team and the woman and her support people. Clearly document who has clinical responsibility and who will provide midwifery care (see [Consultation & Transfer of Care](#) guideline)
- Even if the woman responds to therapy she may be transferred out if <32 weeks gestation. **This is an Obstetric/Neonatal medical decision and is arranged between the shift co-ordinator, the O&G and paediatrician/NNU and flight nurse or Duty Nurse Manager. See Transfers Out Of Maternity - Obstetric**
- If unable to transfer out, deliver in consultation with paediatric team and NNU. Transfer out may be undertaken postnatally once baby stabilises
- Ensure NNU, obstetric and paediatric team are updated with progress/status of woman regularly
- Update LMC as negotiated
- Management plan and full documentation is required throughout the premature labour period
- Ongoing consultation with O&G and paediatric team including methods of recommended pain relief

**4) Preparation for pre term birth if labour continues**

- Discuss with O&G whether to stop tocolytics if these are being used
- Reassess ongoing management plan
- Continuous CTG if possible, if not discuss with O&G
- Update NNU and LMC of plan and baby's status
- Documentation must be ongoing and kept updated
- Neonatal resuscitation equipment available appropriate to gestational age
- **When birth is imminent**, call for assistance. The assisting midwife will facilitate:
  - Preparation for birth e.g. check infant resuscitaire
  - Call NNU staff/paediatrician in advance to allow the team to set up their equipment. Update and inform them if Steroids given, completed and when, and condition of baby through labour or any other concerns e.g. PPRM, infection, APH, abnormal CTG, any VPW issues
  - Notify O&G to attend as required
- **Do not perform ARM** unless clinical indication discussed with O&G
- Notify LMC and update if not already present once birth has taken place

**5) Postnatal Management**

- While on the ward, routine maternal postnatal care should be as per midwifery care plan

- Breastfeeding assistance will be as per [Breastfeeding](#) policy, particularly around regular expressing manually or by pump in liaison with NNU as appropriate
- Routine discharge planning if woman has own LMC
- If the woman has no LMC, LMC needs to be arranged for postnatal follow up, once discharged. This is the responsibility of the discharging DHB staff member.
- The woman should be seen by either the obstetric or NNU social worker to discuss assistance with travel and/or accommodation if baby has been transferred out
- If baby transferred out from Gisborne, then travel to the tertiary unit and accommodation need to be arranged, see [Transfers out of maternity – Obstetric guideline](#)
- Offer women and whanau postnatal debrief as required.

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**RELATED STANDARDS AND PROCEDURES:**

[Fetal heart rate assessment and monitoring](#) – Guideline

[Preterm rupture of the membranes](#) – Guideline

[Referral of neonates to the paediatric service](#) – Guideline

[Emergencies obstetric and neonatal](#) – Guideline

[Safe management of medicines](#) – organisational policy

[Assessments and Admissions to the Maternity Unit](#) Guideline

[Breastfeeding](#) Policy

[GBS – Prevention of Neonatal GBS](#) Guideline

[Consultation & Transfer of Care](#) Guideline

[Partosure](#) Guideline

[Management of Preterm Pre-Labour Rupture Of Membranes \(PPROM\)](#) Guideline

[Transfers Out Of Maternity - Obstetric](#) Guideline

[Magnesium Sulphate for Neuroprotection](#) Guideline

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<http://www.utdol.com/online/content/topic.do?topicKey=pregcomp/11591&view=print#>

18) MOH (2012) Guidelines for consultation with obstetric and related medical services (Referral Guideline)

19) NICE CG25; preterm labour and birth 2015

20) WHO recommendations on interventions to improve preterm birth outcomes. 2015

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<http://www.utdol.com/online/content/topic.do?topicKey=pregcomp/11591&view=print#>

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## APPENDICES

### Appendix 1



Maternity algorithm  
with TAUS.docx

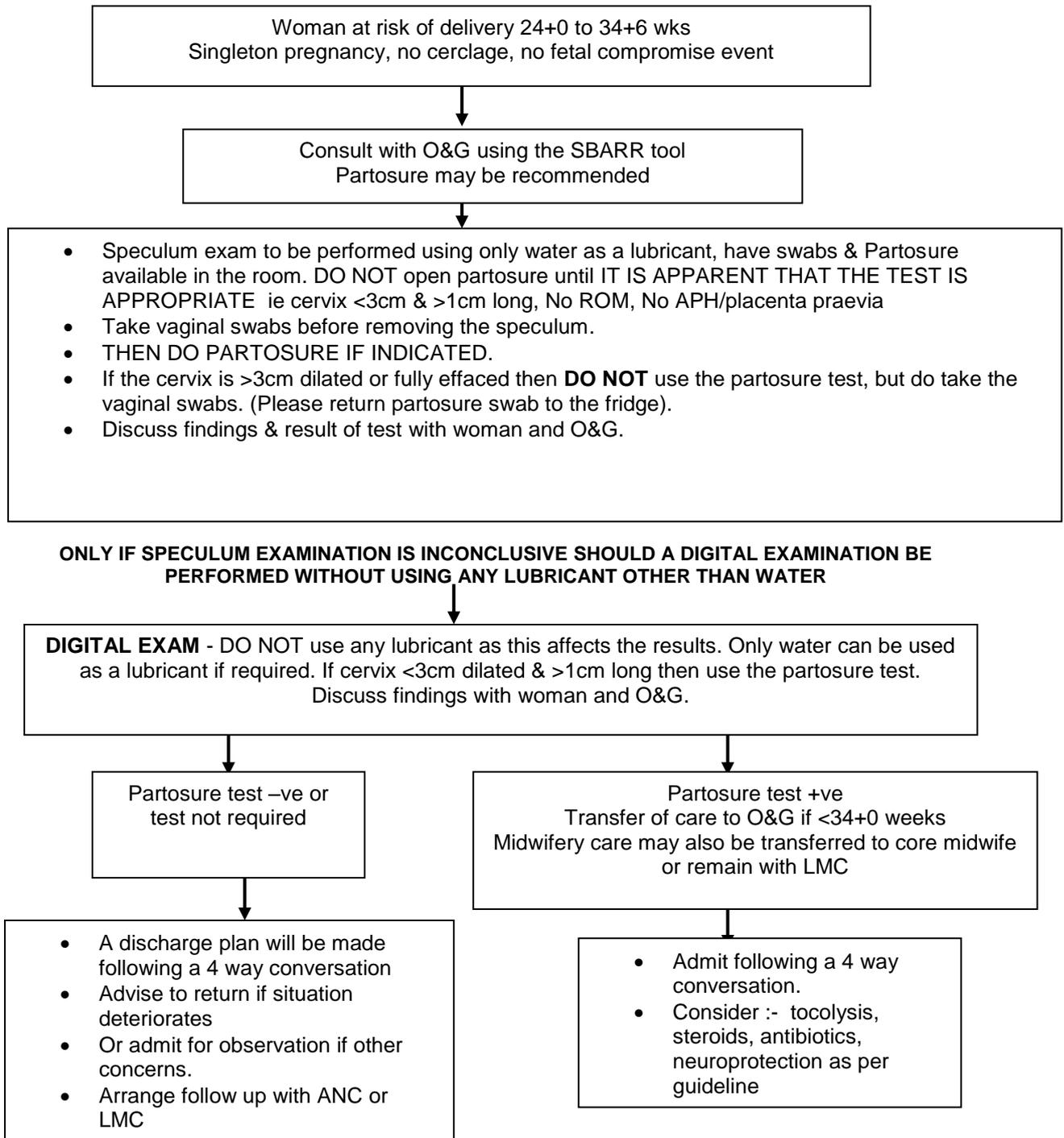
### Appendix 2



Application for  
subsidy by special au

**Appendix 3**

**Recommended management of woman with threatened preterm labour**





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**Authorised By (HOD Obstetrics)**

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**Authorised By (Clinical Care Manager Woman, Child & Youth)**

**Date of Approval: 03.09.2019**

**Next Review Date: 03.09.2022**